

October—November 1955

Two shillings & sixpence

WATER LIFE

and Aquaria World



Water Life

AND AQUARIA WORLD

CONTENTS

	Page
Tank Furnishing	222-223
Water—the Basis of Fishkeeping	224
Breeding the Butterfly Cichlid	225-226
Inheritance in Fish	226
Starting a Vivarium	227-228
Facts About <i>Daphnia</i>	229-230
Concrete Aquaria	231-232
Pondkeeper's Year	232-233
Popular Goldfish	234-235
Hard and Soft Water	235-236
Macabre Angels	236
Know Your Fishes	237
Salmon Discus	238-239
Cichlids by the Mouthful !	238-239
Diminutive <i>Rasbora</i> Species	239-240
Aquatic Plants	240
Star of the Goon Show	241 and 247
Current Research	242
From Continental Journals	242
Aquatic Press Topics	243
Readers' Views	244
Problems Answered	245
In the Aquaria World	246-247
Show Review	249-250
Club Notes and News	252-253

Published Bi-Monthly (alternate months) by Water Life,
Dorset House, Stamford Street, London, S.E.1.
Telephone: Waterloo 3333.
Telegrams: Poultonbir, Sedist, London.
Annual Subscription: Home and Overseas, 15/9
U.S.A. and Canada, \$2.50



FRONT COVER: UGLY OR ELEGANT?

With coiffure piled high and an expression of wide-eyed innocence this Lionhead Goldfish has a certain charm despite his conspicuous rotundity and lack of dorsal fin. Although not all of us would care to have him in our aquaria let us admit that he has a fascination—even if it is through his peculiarity rather than his beauty.

Photograph]

[L. E. Perkins

VOL. 10. No. 5 (New Issue)

OCTOBER, 1955

EDITORIAL

Popular Names

IF you are primarily a systematist, an ichthyologist, a very keen amateur student of fishes, you will know the need for the correct use of fish nomenclature. Maybe, however, you are just a fishkeeper like most of us who, while secretly admiring the glib way our more knowledgeable companions trip off their tongues such mouthfuls as *Aplocheilichthys macrophthalmus*, *Cnesterodon decemmaculatus* and *Misgurnus anguillicaudatus*, often ask why have these lengthy names instead of more popular tags?

Let us admit that to the specialist such wishes are unacceptable, since without being able to speak of the differences between *Hemichromis bimaculatus* and *H. fasciatus* intelligently, or to discuss why *Aplocheilichthys panchax* is an immeasurably better description of the Blue Panchax than are the *Panchax panchax*, *Esox panchax* or *Haplocheilichthys panchax*, to mention but three of its discarded synonyms, they would soon be caught up in a whirlpool of confusion; their wordy arguments could turn to fisticuffs before they realised that they were not even talking about the same fish or were falling down over an alternative.

Revealing Descriptions

We feel subdued when we learn that, as interpreted for us, *semicinctus* means half-banded; *Trichogaster* stands for hair belly; *trichopterus* for hair fin; *melanogaster* indicates with a black abdomen; *gracilis*, slender; *Monocirrhus*, with one whisker and *tetramerus*, in four parts. Would you like to know that you were labelled *cyanoguttatus* because you were blue-spotted; *coryphanoides* to indicate that you were dolphin-like or that your *Macrogynathus* surname, so to speak, intimated that you were large-jawed? To realise that *macrocephala* means big-head is enough to cause that particular *Tilapia* to be most annoyed.

The aquarist must be resigned to the fact that scientific names cannot be dispensed with, and must be patient and understanding when it is agreed among the back-room boys to transfer a species to a new Genus or even to change its name for a legitimate reason.

What is wanted, of course, is the use of imagination and ingenuity on the part of some of the more practical fishkeepers to evolve popular names for our aquarium fishes; names that are to the point and easy to remember. How appropriate is the term Spanner Barb in respect of *Barbus lateristriga*, Harlequin Fish applied to *Rasbora heteromorpha*, and Neon Tetra to describe that colourful midget whose appellation, *Hyphessobrycon innesi*, records for posterity that world famous octogenarian aquarist, Wm. T. Innes.

Individual aquarists and clubs might think out suitable descriptions for the many species that still possess nothing beyond their scientific nomenclature, equalling in terseness and simplicity, Tiger Barbs, Bumble Bees, Clown Fishes, Glass and Ghost Fishes and Scissortails. Let the names be complimentary. We like the mellifluous sound of Bleeding Heart Platies, Translucent Bloodfins, Iridescent Barbs and the appropriateness of Jack Dempseys and Firemouths.

Applying Artistry to Tank Furnishing

Pictorial Principles to Bear in Mind
When Setting Up a Decorative Aquarium

By Harry V. Lacey

AS a photographer, I am frequently asked, "Is photography an art?" The question could lead to an argument lasting for days but I am quite sure that no one will quarrel with the answer I give here, i.e., that, whether it is an art or not does not matter, but it does certainly help if the photographer is an artist.

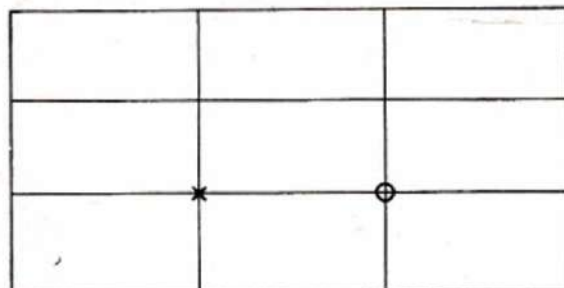
This may seem a roundabout way of beginning a discussion on the subject of furnishing an aquarium, but the photographer is trying all the time to make a picture out of the material before him, by putting a little accent here and sub-

the picture; when the eye has wandered around the middle of the picture and absorbed its contents, it is prevented from wandering out of the area by the firm "stop" in the shape of the tree. By this means it is directed back into the middle section again, particularly if the centre detail is bright, colourful and interesting. If, however, the edges of the picture are very light in tone, or in any way "weak," the eye will have no difficulty in wandering out.

So we will borrow the artist's stop device and adapt our own medium to it by placing a dark and rather tall plant near one of the front frame uprights of our tank and, to avoid the symmetrical, place another type of plant, equally "strong" in the picture sense of the word, on the opposite side. Thus we have achieved our version of the artist's stop objects.

Giving Depth to the Set-up

Now we must aim to achieve a liveliness, a rhythm, combined with a sense of depth, to our picture. Let us consider depth first. We wish to exaggerate the distance between the front and the back of the aquarium. Suppose we use our shingle really liberally and pile some miniature downs—real rolling downs—on the floor of the tank. If these undulations run parallel to our front glass the distance between front and back will be shortened somewhat, but, if the downs run obliquely from front to back, wandering a little in the process and are cunningly contrived to appear stronger and larger right in the foreground, a surprising amount of depth can be gained. A carefully arranged break in the hills, with the help of a few rocks to give a minor focal point, will also help the illusion of distance. Next, so that we



The positions X and O are most satisfactory for important features in the furnishings of a tank such as rock or bold plants.

doing something there, and that is exactly what we are trying to do when we start to furnish a tank with gravel or shingle, rocks, fish and plants; we are attempting to use our materials, along with good taste, to make a three-dimensional picture.

So let us consider a few of the elementary rules and principles of good composition. Please interpret the word "rule" loosely—there are no hard-and-fast rules really. Let us examine a picture of a street scene—any kind of street will do. The picture should be contained within a framework—bounded by an oblong shape, be it a wooden frame, or merely the edges of the paper on which it is drawn. Now we will place a stationary car in our imaginary picture. We shall soon see that, if the car is placed near one of the vertical edges of the picture, it must point into the picture; if it points out of the picture, near the edge, it will give us an uneasy, uncomfortable feeling. We know the car is stationary by signs which we can recognise but, if it started to move, we know it would run out of the picture.

"Contained Within the Picture"

This is an example of the expression used by the art critic when he states that the subject is "comfortably contained within the picture." We must keep this "contained within" etc. impression well in mind when placing our picture parts, such as rocks, into the aquarium.

Another valuable principle of composition can be borrowed from the artist—the "stop" object. The "stop" is the device which prevents the eye wandering out of the picture. Imagine a landscape, a large tree or similar object, rather heavy in form and colour, is placed on the edge of



A large Amazon Sword Plant (*Echinodorus intermedius*) against a background of fine-leaved plants makes an interesting feature of an aquarium. Photograph by G. J. M. Tinnerman.

TWO FIRST-CLASS EXAMPLES OF AQUARIUM FURNISHERS' SKILL

(Photographs by Roy Skipper,
Hendon A. S.)



Above: Hendon A.S. first prize-winning tropical aquarium set up at a WATER LIFE exhibition. Note how the rockwork is arranged in the "dominant third" areas referred to on this page. *Ludwigia* is used in the tank to "frame" the two sides and to prevent the eye wandering out of the picture. Left: First prize-winner at a Hendon show staged by Mr. T. Hobday in the Individual Tropical class. Bold use is made of rock and maximum effect is achieved from plants of varying form and size. The shoal of smallish Characins (Beacon Fish and Rosy Tetras) have ample swim-space in centre foreground.

may achieve true "liveliness" in the rhythm of our layout, we must use plants with as much care as we would arrange the furnishings in our home. A sturdy, big-leaved plant with a dark colouring used near a fine-leaved, slender type is a good idea—both plants gain in interest by being so placed. We shall find that, if we boldly bring a plant well out into the floor of the tank, and combine a rock outcrop around the same spot, the depth from front to back will appear greater; the very fact that the fish can swim *behind* something, and re-appear on the other side, helps the illusion.

We will now try to use the last of our pictorial principles and see how we can use the "dominant third" idea in our living picture. It is an acknowledged fact that the human eye finds it easy to rest on an object of interest, to roam around it and return again, if that object is placed on, near or around one of the lower thirds of the picture area.

Dividing Up the Space

Imagine the picture divided into nine squares. If the object of interest is placed at or near the intersection of the lines forming one of these lower squares, we shall find that it is easy on the eye. It seems to be a natural resting point, thus the term "dominant third." The diagram will help to put over the idea and, whilst studying the simple sketch, we might also note that the centre area is not a very strong or restful spot.

How can we aquarist picture-makers use this principle? Fairly easily, really. Viewing our tank at normal viewing distance and height, we can soon spot the position of this lower third. We can place an object, a plant or rock, in this position, just to see how it looks. Unless there are other objects in the picture which are completely out of harmony with the rest, the effect should be a happy one from the pictorial point of view.

Perhaps it would be a good idea at this stage to sum up

our findings. We are endeavouring to make a picture in depth, framed within the front oblong frame of our tank. The idea of an uninteresting glass box must be completely destroyed by concealing all inside framework from view. Carefully planted greenery can take care of this item. The shingled floor can cover all of the base framework but we must see that the shingle does not "climb up the glass" at the front of the picture. Nothing ruins the illusion of looking into a little underwater world so much as being able to see shingle piled against the glass front—and in any case it calls attention to the glass.

We must use our medium with vigour, especially when we are competing in competitive furnished aquaria sections at shows. Rockwork and plants must be strong and forceful. Instead of scattering an odd rock or two indecisively here and there, as if undecided whether to use them or not, we must mass our rock at a strong point as the poster artist masses his dominant colour. It is all too easy to achieve prettiness but the prize card goes to the competitor who starts with an idea and succeeds in putting it over to the judge.

Did someone mutter a comment about the fish? At this stage we know that a team of tiny fish will not hold their own against larger and more showy specimens on the show bench. There are too many other fish in the hall for the judge to be impressed by a midget team. On the other hand, we should not choose fish which are large enough to make the picture look small by comparison. No, we should balance off our masterpiece with fish of such size and colouring that our little isolated world under water is a complete and self-contained entity. It must give us pleasure in feeling that we have created a satisfying picture, perfectly framed, and at the same time we have achieved a "mobile," with more grace of movement than any artist, using inert materials, could ever hope to produce.

Water—the Basis of Fishkeeping

Paying Particular Attention to
the Dissolved Oxygen Content

By WATER LIFE Analyst

THE habitats of true freshwater fishes (fishes which have evolved in lakes and rivers) are confined to where physical, chemical, biological and other factors form suitable environmental conditions, in which the many different species can show continuance or recurrence. Temperature range, operating within certain defined limits, is the precursory factor triggering off biological sequences, synchronised by the interaction of other factors present within the environment.

It will be remembered that the previous article in this series tentatively dealt with the problem of why it was some species of fishes would not breed in captivity. In this connection it was stated that factors, which perhaps presented breeding stimuli to fishes in the wild, are not always known or perceivable, and cannot therefore be reproduced in aquaria. However, even when some of these factors of biological significance are made known, simulation of natural conditions may present great difficulties to the aquarist. Thus, field observations carried out on the habits of spawning Salmonids, showed that sites were always chosen where the gravel of the river bed formed permeable mounds, consolidated gravel being avoided. It was discovered that a well defined downward current of water (irrespective of the velocity of the stream) passed through and under the gravel redds, thus presenting a constant and maximum concentration of dissolved oxygen to the incubating ova and developing larvæ of Salmon, Trout and Minnows. Reproduction of these physical conditions in a tank resulted in the spawning of Minnows (*Phoxinus phoxinus*)—for which no previous record is known—and the successful rearing of some thousand was recorded.*

Choice of Spawning Sites

With regard to the gravel sites chosen by spawning Salmonids, it might be interesting to record here the following paragraph which appeared in *Field* for December 6, 1884. "So soon as the embryo is sufficiently formed, the ova should be laid down in gravel redds, contiguous to some small stream falling into the river or locks to be stocked." Thus the rearing of Minnows, by a simulation of physical conditions which ensured a high concentration of dissolved oxygen in the natural habitat, indicates that the recognition of factors likely to be of biological significance, may lead to rewarding results.

The importance of dissolved oxygen as an ecological factor during spawning and the incubation period of the ova of different species of fishes was mentioned in the February issue of *WATER LIFE* (p. 25), and it may not be out of place to consider now the degree of importance to both young and mature fishes of dissolved oxygen.

Although oxygen requirements may vary considerably with different species, it is known that these requirements are always relatively much greater during the period of growth of young fish. Thus it has been found by experiment that the growth rate of young specimens of Salmon (*Salmo salar*) was greatest when the concentration of dissolved oxygen did not fall below 10 milligrammes per litre, whilst older fishes required only 6 milligrammes per litre. This means that the water in which maximum rates of growth of young fishes take place (other ecological factors being satisfactory) would have to contain dissolved oxygen to the extent of over 90 per cent of saturation, a high value.

On the other hand, for normal respiration, mature fishes

would need water containing only just over 50 per cent of saturation. However, during the breeding seasons, sexually ripe fishes have a higher respiratory rate, and the requirements for oxygen at these times is much increased.

The factor of temperature also affects the breathing of fishes. An increase in the temperature of water will decrease its content of dissolved oxygen which will come out of solution in the form of minute bubbles. In this way the water will tend to become deficient in oxygen, causing fishes to increase their respiratory rate in order that a larger volume of water may be passed over the gills to abstract the required amount of oxygen.

As already indicated, the rate of breathing varies greatly for different fishes. Thus the normal breathing rate for Minnows is in the range of 150 respirations per minute whilst, for some of the lung fishes, it may only be 12 per minute.

The fact that a rise in temperature of the water causes a rapid acceleration in the number of respiratory movements performed in order to take in an equivalent amount of oxygen (more is really needed) to that at normal rates of breathing, makes it become clear why those species of freshwater fishes with a high respiratory rate for the usual range of temperatures prevailing in their natural habitats, may quickly succumb when temperatures suddenly rise above normal. Some fishes are more easily acclimatised to a gradual rise in temperature than others. Thus Carp (*Cyprinus*) will thrive at tropical temperatures as they do at more temperate ones. For the past two years I have kept Veiltail Goldfish in my experimental tank at a temperature of 27 deg. C. (81 deg. F.).

Quickened respiration, and the great activity of the 10 large fishes kept, calls for heavy feeding, and normally these conditions would soon lead to a complete de-oxygenation of the water with subsequent death of the fishes. However, a reasonably high concentration of dissolved oxygen is always present during the daytime by reason of the fact that a heavy growth of algae is maintained in the water, which has the appearance of green pea soup.

Special precautions are taken at night, when supplementary aeration of the water has been found necessary, thus indicating the extremely rapid uptake of dissolved oxygen. Many freshwater tropical fishes have high respiratory rates, and, when kept in aquaria (a relatively small bulk of water compared with that present in their natural habitat), plant life becomes a major ecological factor in supplying demands made for oxygen in static water.

Readers' Hints and Tips

Feeding White Worms

THE best method of collecting White Worms which I have found, so that the creatures are fed to the fishes free of culture medium, involves the use of a sheet of perforated zinc and another of glass. The sheet of perforated zinc is placed direct on to the medium and the food is introduced on top of this sheet. Over the food a sheet of glass is then placed.

The worms will crawl into the food and they can be gathered from the glass and zinc with no trace of the medium. It was my intention to give up culturing White Worms, before I tried the above method.—(F. Clare, London, N.W.10.)

(10s. 6d. is paid for all published hints and tips.)

*T. A. Stuart, "Nature," London. Vol. 172, 1953, p.407.

Breeding and Rearing the

Butterfly Cichlid

By K. D. Fawcett



Pair of *Apistogramma ramirezi* (photograph by G. J. M. Timmerman).

THE operative words of the above title are "and rearing," for, given an adult pair of Butterfly Cichlids (*Apistogramma ramirezi*), there does not seem to be the slightest difficulty in getting them to spawn provided they have previously been well conditioned on livefoods.

In the accounts I have read concerning the breeding of this species little information appears to have been given apart from the fact that they spawn in the usual Cichlid manner and that the young, when hatched, should be reared upon livefoods, Mikro-worms, newly-hatched Brine Shrimps, *Daphnia*, White Worms, etc. in roughly that order.

The comparative rarity of the species even now makes it appear that Butterfly Cichlids are not as simple to rear as these instructions would imply, and my own experience and numerous failures before I was eventually successful lead me to believe that there is still much to learn about them.

My first *A. ramirezi* were obtained in Portsmouth in 1952 and subsequently were awarded a first prize in the A.S.L.A.S. show of the following year. I believe that their colour did much to earn this award and that is my reason for mentioning it here. Subsequent enquiries elicited the information that in the opinion of the importer there were two distinct types of *A. ramirezi*, the more highly coloured variety being slightly smaller when fully adult than its duller-hued brethren. It is this highly coloured strain to which the following breeding methods apply though this, of course, does not preclude the possibility that the same method will work with the other variety.

I now propose to give details of the procedure I am employing at the present time in order to breed *A. ramirezi*. I have a trio, one male and two females, which are kept in a tank measuring 18 x 10 x 10 in., the base of which is covered with ordinary aquarium gravel. Several large Water Lettuce plants float on the surface mainly to the front of the tank so that their roots form a screen and give the fish the privacy they seem to prefer. A small piece of slate is laid flat upon the compost towards the rear of the tank. The parent fish are left undisturbed and fed exclusively on livefood, mainly White Worms.

During the Summer months they spawn regularly at fortnightly intervals and the slate is invariably chosen as it is the only smooth flat surface available to them, especially as they do not appear to dig holes in the compost as do certain other Dwarf Cichlids, notably *Pelmatochromis kribensis*. The increase in coloration and the appearance of the female's breeding tube is a sure sign that a spawning is

imminent. Temperature does not appear to have a great deal of bearing upon the spawning of my *A. ramirezi* and, in common with other fish in the fishhouse, they are subjected to quite a large variation of temperature in 24 hours.

Immediately the spawning is completed I remove the slate with the eggs attached and place it in a jar containing fresh tap water of the same temperature as that of the tank water. The slate is placed with one edge on the bottom of the jar and the top leaning against the side, keeping the eggs on the underside. Aeration is applied with the diffuser stone placed between the slate and the side of the glass jar so that the air bubbles run up the slate and directly over the eggs. The flow of bubbles should be reasonably powerful since there is no fear that the eggs, which are quite hard to the touch, will be dislodged as they are quite securely attached to the slate.

I usually add a very slight amount of methylene blue, enough only to colour the water faintly, but have on occasion hatched the eggs without resorting to the use of anything other than fresh tap water. In approximately 48 hours at 75-78 deg.F. the eggs hatch and the fry form themselves into a wriggling mass upon the base of the jar. The slate is thereupon removed but aeration is retained.

Five Days Before Free-swimming

The fry do not become free-swimming for another five days, then they cease to wriggle on the base of the jar and rise up in the typical Cichlid swarm to the middle level of the water. This is when the critical period is approached. Time after time the fry were lost up to three or four days after they became free-swimming, one of the clearest indications of the fact that all was not well being the manner in which they would cluster at the surface of the water before dying. The cause could not have been lack of oxygen for aeration was maintained throughout, nor could it have been incorrect feeding for it was found that they were able to eat newly-hatched Brine Shrimps or small Mikro-worms from the very outset. I therefore turned my attention to the water itself, and here, I feel, the answer is to be found. *A. ramirezi* fry cannot stand hard water and, therefore, for those aquarists living in areas where the tap water has more than approximately 10 degrees of hardness (Epsom—where I live—water being 25), it is essential that softened water be used. This can be achieved by a variety of methods, but perhaps the simplest is by the dilution of tap water with distilled water.

To return to my method of hatching and rearing; as soon as the fry become free-swimming they are transferred from the hatching jar to a small aquarium containing only the softened water with a bottom layer of fine sand. This is kept partially shaded from direct sunlight during the first weeks of the young fishes' life and they are fed, as previously stated, upon Mikro-worms, Brine Shrimps, etc. In fact, livefood must predominate throughout their lives. After these first critical weeks they are transferred to larger quarters and, as the fry grow, they do not appear to be affected by hard water and will flourish under a variety of conditions always provided that any form of pollution is avoided and reasonably clean conditions are maintained.

(Continued next page.)

Inheritance in Fish (5)

Albino Fish from Grey Guppies

Genetical Reason for Their Appearance—
What Factors Affect the Size of Fish?

By R. J. Affleck, M.Sc.

A FEW months ago a friend gave me a pair of Grey Guppies. The fish had been imported and were supposed to be "hybrid Albinos" (i.e., carrying the gene for albinism). They increased in size, were mated and eventually the female produced a brood of fish. The water in the tank was green and, after removing the female and adding some *Daphnia*, I did not take a great deal of notice of the young fish except to observe that there were grey and yellow-coloured ones—the latter I presumed to be Albinos. Normally, if I am making a special cross, I always empty the tank and count the number of young on the day they are born.

A week or so went by with the water still fairly green so that I could not get a clear view of the fish. Then I noticed

Gametes	AB	Ab	aB	ab
AB	AB AB	Ab AB	aB AB	ab AB
Ab	AB Ab	Ab Ab	aB Ab	ab Ab
aB	AB aB	Ab aB	aB aB	ab aB
ab	AB ab	Ab ab	aB ab	ab ab

Expectations from two Grey Guppies, both AaBb. The heavily shaded squares represent Grey fish (9), those lightly shaded signify Blond fish (3), whilst those unshaded are Albinos (4).

that there seemed to be rather a lot of Albinos. Albino Guppies have been reported as rather delicate in that many die either just before, or just after, birth. The largest recorded brood of living Albino young obtained from Albino parents is seven.

At last I emptied the tank and examined the young fish, which were about a month old and all the males had developing gonopodia. I soon noticed that all the yellow fish were not Albinos—some were Blond (Gold)—but I was very pleased with what I did see, viz., Grey, 26; Blond (Gold), 10; Albino, 12 (7 males, 5 females).

Reasons for their Production

How were these fish produced from a pair of Grey Guppies? Well, it is obvious that although they were Grey they were carrying the genes for albino and gold and, as already discussed in this series, both the blond (gold) and albino characters are recessive to grey colour.

Let us first consider the characters grey and blond. Each of the parent fish must have been Bb, i.e., they were not blond in colour but they carried the gene for blond (b). Similarly, when we consider the characters grey and albino we realise that each parent must have been Aa. We can now write down the parent fish thus:— Grey (AaBb) × Grey (AaBb).

The gametes produced by such fish will be of four types, AB, Ab, aB, ab, and if we construct a diagram similar to that on page 68 of the April-May, 1955, issue of WATER LIFE,

we find the theoretical expectations of the cross (see drawing on this page).

Those squares with at least one A and at least one B represent Grey fish (9); those with at least one A and two b's will be Blond (3), while those with two a's will be Albinos (4).

Readers will note that this is a modification of the 9:3:3:1 ratio with the last two numbers combined.

The total fish in my tank was 48, so theoretically I should have expected 27 Grey fish, 9 Blond and 12 Albino. The actual numbers obtained were almost too good to be true. As stated in a previous article, it is a matter of chance which sperm fertilises which egg and, although particular broods may not correspond exactly to the theoretical expectations, taking the average of a large number of broods, the actual and theoretical values do correspond.

Producing Large Fish

Many aquarists often speculate on the inheritance of size and wish to know how they can breed large fish. At the moment there does not appear to be any reliable data on the inheritance of size in fish but there is information for other animals and for plants.

If animals or plants are inbred and selected for very many generations the individuals become more and more homozygous (i.e., the genes forming a pair are similar), and therefore more and more similar in appearance. In the case of plants it is possible to remove cuttings from the parent and, because the formation of gametes followed by fertilisation has not taken place, they have the same genotype as the parents.

When animals and plants which are homozygous for all, or almost all, factors are raised under identical conditions, differences in size will be noted among the individuals—a few will be large, most will be medium and a few will be small. It has been found that, if further generations are produced (some from large individuals and others from small ones), variations in size will again occur but the size of individuals from the large parents will be very similar in size to the individuals from the small parents.

(To be continued.)

Breeding the Butterfly Cichlid

(Continued from previous page.)

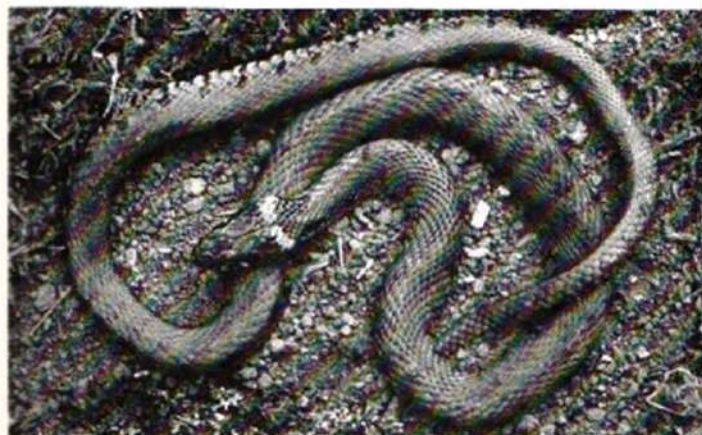
Rightly or wrongly it is the contention of both a fellow member of the Kingston Aquarist Society and myself that the species will spawn readily throughout the year but that success in rearing is much more likely during the Summer months than during Winter. This would appear to be due to some action of the sunlight upon the water for, at all times, these fish were bred under naturally lit conditions.

To sum up, *A. ramirezi*, when adult and in good condition, is one of the most beautiful tropicals available to us, especially if kept in an aquarium with a dark background where the main source of illumination comes from the front. The breeding and successful rearing of it is sufficiently difficult to present a challenge to the aquarist, but once the basic problems involved are understood, and dealt with, its propagation is not impossible and the final result is immensely gratifying.

Starting a Vivarium (2)

Grass Snakes and Wall Lizards

By Alfred Leutscher, B.Sc.



[Photographs]

[L. E. Day & S. Crook]

Left: Our native Grass Snake, ideally suited to vivarium life. Above: The Adder, Great Britain's only poisonous snake.

FROM amphibians, which were dealt with in the last article, we will now turn to reptiles, as these form part of the vivarium hobby. True reptiles differ from amphibians in a number of ways, one obvious difference being the nature of the skin. In the former this is covered by an outer layer of scales or horny plates, giving the reptiles a certain protection from injury, disease, and from drying up due to exposure. Generally, a reptile is fonder of sunbathing than an amphibian, and will lie out for long periods in places where an amphibian might soon die. Some reptiles can exist in extreme conditions of dryness, such as deserts.

Another important difference is that a reptile has no visible tadpole or larval stage. From the word go, as soon as it hatches or is produced alive by the mother, the baby has a pair of well developed lungs and looks like its parents. Even such particularly aquatic reptiles as crocodiles and turtles must surface for air and they invariably come ashore to lay their eggs. Sea snakes appear to be the only exception and, as "livebearers," are said to have their young at sea, in the shallower coastal waters.

Easily-kept Reptiles

As examples of common reptiles well known to the vivarium keeper, I have selected the Grass Snake and Wall Lizard. Both are fairly easy to obtain in the proper season, are hardy, and give very little trouble if their few respective needs are satisfied.

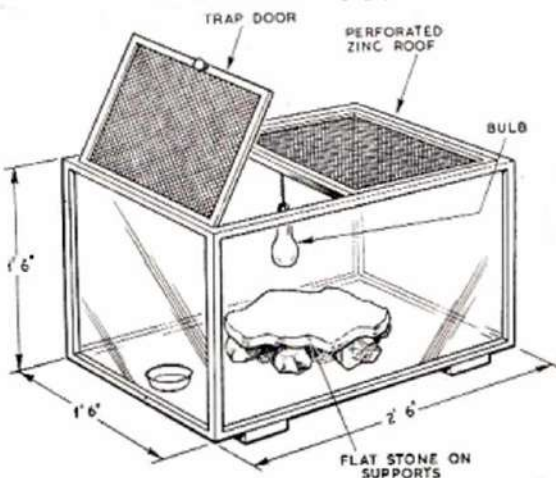
The Grass Snake is a great favourite with many persons, and a specimen may be caught wild in the countryside (first making sure that it is not our other native species, the venomous Adder), or purchased from a dealer. The shop specimens are usually imported from South Europe, and called Italian Grass Snakes.

The kind of vivarium which I prefer for such a pet is a roomy glass cage with a wooden framework. The illustration will give some idea of its shape and size. It will suit one or two Grass Snakes. The vivarium floor is made of tongue-

and-groove boarding raised on cross pieces which hold them together. The frame is of one-inch jointed hardwood. The glass (ordinary window glass will do) is fitted to the frame with shaped beading after the fashion of a picture-frame construction. The roof is covered with perforated zinc, and is in two halves. One half is a permanent fixture, and the other is built as a separate, hinged frame which acts as a trap-door in the roof.

If desired, the side of the vivarium facing the wall against which it will stand may be boarded in. The point to aim at is letting the maximum light enter the cage, wherever it may stand. It is finished off with a coat of wood stain on the framework. The floor is left untouched.

(Continued next page)



The design of the vivarium described by Mr. Leutscher.

"Guide to Tropical Fishkeeping" Receives Wide Acclaim

WRITTEN by J. H. P. Brymer, in collaboration with the Editorial Staff of WATER LIFE, "Guide to Tropical Fishkeeping" is a lavishly produced volume of 374 pages including 269 black and white photographs, 24 photographs of fish in natural colour, and six full colour identification plates showing 68 species and varieties.

The work has been received enthusiastically in many countries. Random comments are:-

- "Undoubtedly one of the most outstanding works of its kind."—The Fish Culturist (United States).
- "All that one needs to know about this fascinating hobby."—The Field.
- "A first class reference book."—The Times of Malta.
- "In its field it is outstanding."—Aquatic Life (United States).
- "Likely to remain a standard reference book for some time to come."—Yorkshire Observer.

You should not be without this authoritative book. Order a copy from your bookseller to-day, price 35/-, or send a remittance for 36/- to WATER LIFE, Dorset House, Stamford Street, London, S.E.1, when a copy will be sent to you direct.

Starting a Vivarium (2)

(Continued from previous page)

Showcases seen in shop windows or museums make excellent snake vivariums, and can sometimes be picked up cheaply at second-hand shops, or at auction sales.

It will be noticed that ventilation is via the roof. This ensures that the snake will not suffer from draughts as might well happen with any side ventilation. The only door, in the roof, will minimise escapes; even the best of vivarium keepers sometimes leave doors open!

Vivariums can be made to many shapes and designs, some in wood, others in metal. The above example has been purposely chosen for ease of construction as well as cheapness. We now come to the contents. It is tempting here to plant out a small garden with a miniature pool, in an attempt to produce the natural surroundings associated with a Grass Snake, for in Nature it is a serpent which likes to bask in the sunshine and has a fondness for water.

After many years of keeping Grass Snakes, I have decided, regretfully, to dispense with live plants in a small vivarium, attractive though this may look. It never works in practice. For a few days the plants look fine, then one begins to notice that they are getting disturbed and even flattened by the snake's movements. Also, each time the animal takes a bath it drags water out of its dish, and in a surprisingly short time the whole vivarium becomes a marshland. As a result the creature can have a permanently wet skin which never gets a chance to dry off. This may lead to skin trouble due to difficulty in sloughing.

It should always be remembered that, in the wild, snakes have clean and dry skins, and that even after a spell in water, they dry off quickly. Plants which need watering should therefore be used only in the larger vivarium, or the garden reptilary, in which there is ample room for the creatures to move about. In the cage described above, the wooden

floor is covered with a loose layer of dry earth and sand, mixed with dead leaves, and covered with clumps of dried moss, bracken and heather. Here and there flat pieces of bark, stone or tiling are supported on upright stones to form miniature caves, under which the snake can hide. A shallow dish of water, replenished daily, is the only liquid in the cage, and is for drinking. From time to time my snakes are removed from their cages and given a bath in a separate bowl.

Food for the Grass Snake should not be difficult to supply. Grass Snakes feed in the main on frogs, newts and small fish—some will eat toads. They readily tame and submit to gentle handling, even taking food from the fingers—and food which is freshly killed at that. This is a useful habit, as some owners object to giving live food to snakes.

Supplying Light and Heat

Lighting and heating are desirable, especially during dull or cold weather. An electric light bulb suspended in the cage out of harm's way will provide both. A flat stone or some bark placed beneath it will encourage the snake to curl up in the warmth. This, however, is only a stand-by, and full advantage should always be taken of any available sunlight by placing the vivarium near a sunny window, or even outside, but first making sure that either the heat will not become excessive or that the vivarium will not be soaked by rain.

What has so far been said applies equally to the keeping of the Wall Lizard. Of the many available lizard species this is one of the commonest on the market, as well as one of the hardiest. It comes from South Europe. A small collection of about half-a-dozen specimens will provide much pleasure and entertainment, since these active little creatures are always doing something. They readily tame, feed from one's fingers, and can even be taught little tricks.

Wall Lizards live up to their name, and like to bask and hide in ruins, old walls and among rocks. As a modification to the vivarium, a miniature "wall" made from broken house bricks could be built up along the back, and the holes and cracks loosely packed with moss. Here again, dryness is the best in the long run, as it lessens the risk of illness and fungus troubles.

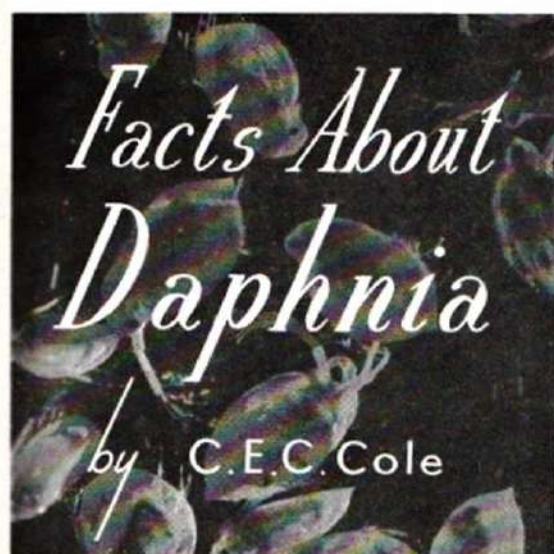
Lizards are sometimes affected by vitamin deficiency, often due to lack of sunlight, and warts appear on their bodies. Here, even more so than with snakes, sunlight is very beneficial, and the lizards should be given the opportunity of a sunbath from time to time. Wall Lizards will eat almost any small animal, such as insects, worms, spiders or crustaceans. They also relish soft fruit and sweetened liquids.



Photograph

[W. S. P.]

Wall Lizards, an agile species for the indoor vivarium.



[Behr photograph]

AT the conclusion of the first part of this contribution in the last issue I mentioned it was commonly accepted that sexual reproduction of *Daphnia* only occurred when conditions were particularly unfavourable. Whilst it is perfectly true that males appear and the females lay ephippia, or resting eggs, under such circumstances my experiments suggested another and more logical reason for their development.

The first observation which made me wonder was the fact that whenever I found ephippia-bearing females they were always considerably less than text-book maximum for their species. Furthermore, both smaller and larger parthenogenetic eggbearers of the same species were present and all the ephippia carriers were of approximately the same size. This applied to samples collected in most months of the year, and from ponds as much as 40 miles apart, in which entirely different conditions prevailed.

Specimens kept under test conditions from birth grew to maturity, laid batches of parthenogenetic eggs, and then developed ephippia. These were moulted in the carapace. In the case of *D. magna*, the ephippia remained on the bottom of the container, but with *D. pulex* and *D. obtusa* the dark, seed-like cases floated to the surface, broke the meniscus, and rested on the water surface, leaving the carapaces on the bottom to rot away.

Extracting large numbers of ephippia, I allowed them to dry for a month or so, and then replaced them in fresh

First-hand Observations on the Life Cycle of these Crustaceans and the Conditions which Influence Them

tap water. Within five days they hatched out. This marked ability to withstand drought conditions no doubt accounts for cultures of *Daphnia* starting from dried *Daphnia*, amongst which there is almost certain to be a number of ephippia.

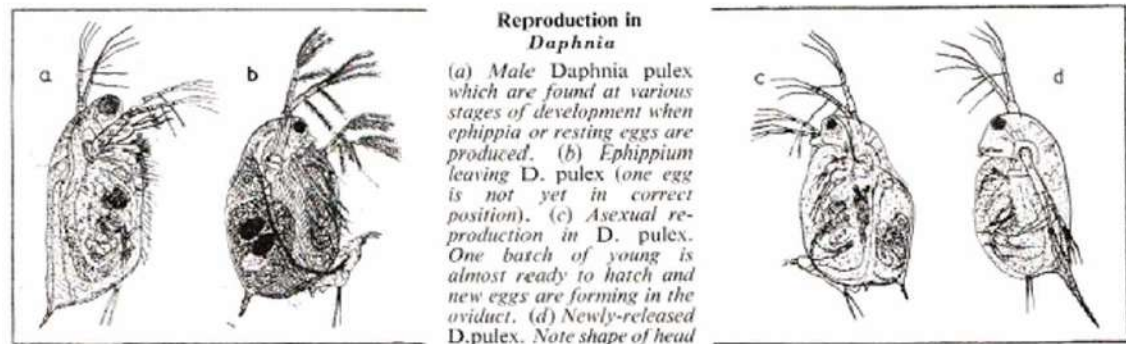
Having developed ephippia, countless numbers of test females moulted them, and then proceeded, in the same water and in conditions where there was grave risk of the water drying-up, to lay fresh batches of parthenogenetic eggs at regular intervals. Thus there is every indication that the development of resting eggs is not an abnormal procedure, but a natural stage in the life and growth of most *Daphnia*.

Re-population of a Pool

When one considers that these creatures are consumed in enormous quantities by fish, it can be seen that, if only a few escaped being eaten, they would not be able to re-populate a pond quickly enough to ensure the survival of the species. But if, when they were small enough to be reasonably safe from anything but fish fry, they laid eggs which would not be consumed, their numbers would stand a good chance of being maintained. However many were devoured, there would always be further eggs to hatch at a later date. Moreover, as many of the resting eggs float on the water they stand an excellent chance of being blown from pool to pool, or taken on the feathers of birds which have splashed about in their vicinity.

Quite often, standing on the banks of a *Daphnia* pool, it is possible to see groups of *Daphnia* clustered so thickly together near the surface of the water that they appear as a reddish-brown stain. Examination of these clusters will usually reveal many ephippia-bearing females and a fair number of males. These latter are much smaller than the females—about one-third their size—and swim about in a different, freer fashion. Every two or three seconds they make a headlong dash at the nearest female, and attach themselves to her carapace. They are absolutely indiscriminate in their choice, and so meet with many disappointments. A female not ready for their embrace will brusquely shake them off. Frequently two males will attend a female, clinging on to the lower half of her carapace by means of their modified first pair of legs. The ventral edges of the male shells are usually adorned with rows and tufts of hair. The greatly enlarged first pair of antennae gives them the appearance of smoking a cigarette! Frequently the end of the tail is modified in some way.

No-one who has sought *Daphnia* or studied them at all closely can fail to be puzzled by their reaction to light. In a small pool in my garden, during the Spring and Summer months, both *D. magna* and *D. pulex* can be found for the



Reproduction in *Daphnia*

(a) Male *Daphnia pulex* which are found at various stages of development when ephippia or resting eggs are produced. (b) Ephippium leaving *D. pulex* (one egg is not yet in correct position). (c) Asexual reproduction in *D. pulex*. One batch of young is almost ready to hatch and new eggs are forming in the oviduct. (d) Newly-released *D. pulex*. Note shape of head

first two or three hours of daylight evenly spread out round the edge of the water just below the surface. As the sun rises they go deeper and deeper, and at noon, or shortly before, can only be found in the shade of lily pads or just above the muddy bottom. After dusk, they begin to spread out again, and a torch shone upon the surface of the water will attract large numbers into its beam.

In very clear water during the same period, they will swim away from a shadow falling upon the water into the

lying upon the bottom of the particular stretch of water.

When the dissolved oxygen is small in quantity, the *Daphnia* develops a quantity of haemoglobin. Small quantities of sulphur and iron, with other substances, are utilised to produce haemoglobin, which absorbs oxygen whenever it comes into contact with it to form oxyhaemoglobin. When the tissues of the *Daphnia* require it the oxygen is given to them.

The haemoglobin colours *Daphnia*, giving them a reddish hue. Reddish specimens kept in sparkling, well oxygenated water lose colour after several days.

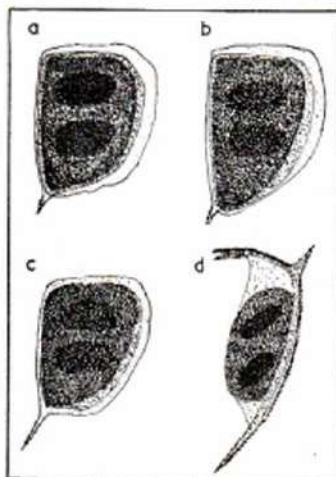
It is well to remember that the redder the *Daphnia* the fouler their environment, as a general rule, and that to feed them to fish in aquaria without first rinsing them under a tap is to run the risk of introducing substances likely to cause pollution.

I would like to emphasise that it is the variation in colour within a given species that is accounted for as above. Variation of colour between species is another matter altogether. Some are always very transparent, and others singularly opaque. Between these two extremes are varying degrees of colour—from the palest brown to almost black.

Attack by Fungus

When water conditions are fairly foul, and *Daphnia* are nearing the end of their life span, they are frequently attacked by a species of Fungus. In the Spring and Autumn, many specimens are found which are so thickly encrusted with colonies of a minute Infusorian that they have difficulty in using their limbs and swimming antennae. The Infusorian is one of the "bell animalcules," each of which has an open end (lorica) fringed with rapidly flashing cilia. With the difficult but still rhythmic beat of the legs of the *Daphnia*, and the whirling of countless numbers of these cilia, the turmoil in the water has to be seen to be believed. Yet to the unaided human eye it is invisible.

Daphnia have no friends in the animal world, unless we can class bathing birds as friends. These, by splashing about in *Daphnia* pools, probably aid in the distribution of the floating ephippia, which become lodged in the feathers



Resting Eggs
of Two
Daphnia Species

Resting eggs, or ephippia, are able to resist extremely adverse conditions, and thus the continuation of *Daphnia* species is assured. a-c are ephippia of *Daphnia* within the pulex group whilst d. shows a *D. magna* ephippium. Drawings illustrating this article are the work of the author.

sunlit portion. During the period of nuptial dances, mentioned previously, they delight in the sunniest position, whatever time of day it is. Where trees shade the major portion of a stretch of water, *Daphnia* will collect in the small patches of sunlight where stray sunbeams strike the water. As the sun continues on its westerly circle, so the *Daphnia* change their positions to fresh sunlit portions of the pool.

Another interesting phenomenon is the way some species of *Daphnia* change their colour with changing conditions in their immediate environment. Not, of course, in the same way as chameleons, but over a longer period of days or weeks.

D. hyalina, as the name implies, are always of a glass-like transparency, but *D. magna*, *D. pulex*, *D. obtusa*, and many of the *longispina* group are comparatively opaque. Where the water from which they are taken is cloudy or brownish with suspended organic matter, they take on a distinct reddish-brown hue. Rightly or wrongly—probably wrongly—these coloured specimens are highly prized by aquarists, being regarded as more nutritious than the semi-transparent species. I have examined many specimens in which the carapace itself seems stained with colour. In others the coloration seems to be produced by the presence of large amounts of oil globules in the body of the creatures. Particularly is this the case with male *Daphnia*.

Effect of Clear Water

If coloured specimens are kept in crystal clear water, however, they lose the coloration and after a few days or weeks, are almost as transparent as the hyaline species. Freshly moulted specimens, both in thick and clear water, are always more transparent than the others, as are young *Daphnia* of all species.

It has been frequently noted by observers that a given species of *Daphnia* may vary considerably in colour from time to time, even in the same body of water. It has been said that the variation in colour is accounted for by the food consumed by the creatures, but this is not the complete story. The oxygen content of almost any pond, ditch, and lake depends not only upon its exposure to air and sunshine, but also upon the amount of decomposing organic matter



The heads of three *Daphnia* species to show variations. Left: *D. obtusa*. Centre: *D. pulex*. Right: *D. magna*.

and are deposited where the birds next bathe. Most creatures living under water seem to prey upon them, but by far the worst enemies are fish. Practically every species of freshwater fish lives almost exclusively, at one time or another, upon these little creatures and their near-relatives. Thus any means which can be devised for culturing *Daphnia* will aid in the production of an increased number of fish.

To build up their bodies, and in eating, *Daphnia* extract certain chemical substances from the water. When huge numbers are collected from a given pool, time and time again, there may exist a very real peril that the successive crops will dwindle. Pools should be left alone periodically, therefore, to recover their fertility, or fertilisers placed therein which will foster the production of suitable *Daphnia* food. This must be done with extreme care, however, to avoid destroying all living things in the pond, and is a subject upon which more research is necessary.

So far as I am aware, the only official body which has done anything along this line is the Freshwater Biological Association, and some of its findings are published in the booklets, "The Production of Freshwater Fish for Food," and "Key to the British Species of Freshwater Cladocera."

Home-made Concrete Aquaria

Cheap and Effective Way of Building
Tanks for Fishhouse or Outdoor Use

By N. Brown

CONCRETE aquaria are not popular for use inside the home but, for the fishhouse or for specialised outdoor use, they can be invaluable. They suffer from the disadvantage of being rather cumbersome, but they are efficient, cheap, and, as will be shown below, can be made with little difficulty.

The type of tank to be described is shown on drawing A. Here the base and two ends are of cast concrete, while the long back and front are of glass. No tank cover has been provided, but, if required, this can be of wood and of simple box-like construction. Within limits, such tanks may be made to any desired size, but normally this will be fixed by the size of glass available.

Plate Glass Preferable

Plate glass of $\frac{1}{4}$ in. (or similar) thickness should be used, and it is advisable first to obtain two equal-sized panels and to build up the tank around these. New glass cut to size may cost as much as 3/6d. per square foot, but it is often possible to obtain suitable material from an old mirror, car windscreen, etc. The cutting of glass of this thickness is hardly a job for the amateur, but it will be undertaken by a glazier or shopfitter for a few pence. Once having had the glass cut it is advisable to pass what will be the top edge of each panel through a gas jet several times, keeping the glass moving rapidly. This will round over these edges of the glass and may prevent accidents when the tank is in use.

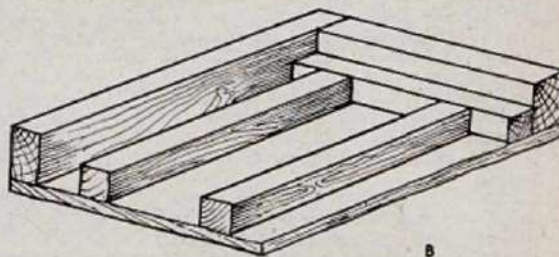
The three concrete members are cast in two different types of wooden mould, and we will consider the base mould first. Wood of 2 in. \times $\frac{3}{4}$ in. section is used for the sides of the mould, and $\frac{1}{4}$ in. or $\frac{3}{8}$ in. thick plywood for the bottom. Whilst it is not necessary to use superior quality wood, the timber should be reasonably free from knots, splits and nail-holes.

What is required is a wooden framework nailed on to a base, the inside dimensions of the frame being $\frac{1}{4}$ in. longer than the length of the glass panel, with the width the same as the overall width of the concrete side. Along the inside edges of the shorter sides a strip of $\frac{3}{8}$ in. square wood is nailed at each end. Two long strips of similar section are fitted between these short pieces, and they have their outer edges

at $\frac{1}{4}$ in. from the inside face of the long side of the mould. It is essential that all strips are well fastened down so that they cannot move when the concrete is poured in.

Drawing B is of a corner of this mould. It gives an idea of the method of assembly. A section of the base is seen with part of one side, one end and of the strips fixed to the base.

The second type of mould (of which two will be needed) differs slightly. Here the inside dimensions of the mould must be equivalent to the desired overall width, and the height minus $\frac{1}{4}$ in. Parallel to the vertical sides the two $\frac{3}{8}$ in.



Section of the wooden framework used as a mould for the base of the concrete aquarium. Wood selected should be of reasonable quality for a good finish to the complete aquarium.

strips must be fixed $\frac{1}{4}$ in. from the interior edges of the mould so that later the grooves they make in the concrete will align correctly with the grooves on the base. A similar strip for the bottom joint of the tank is fitted across the bottom of the mould.

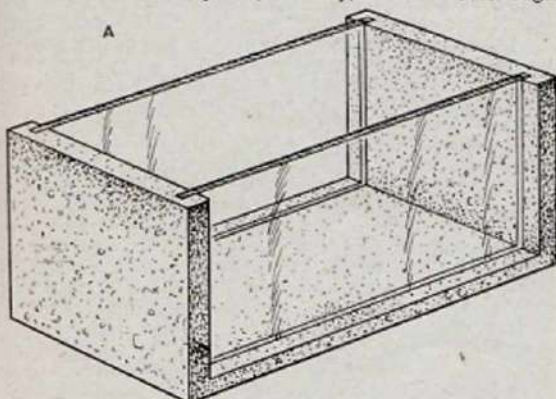
In assembling a tank of this kind the main problem is to hold the three members and the glass together while the joints are setting. If the tank is a small one it can be held together with strong cord, telephone wire, etc., but a more reliable job can be done by using four temporary fastening rods. These should be of approximately $\frac{1}{4}$ in. diameter, about 3 in. longer than the overall length of the tank, and fitted with a nut at each end; the diameter of the bolt is of no great importance. Four wooden plugs, $\frac{3}{4}$ in. long, are shaped up with a chisel to slightly more than the rod's diameter and are fastened on end to the inside of the mould (two at the top and two at the bottom) just inside the groove strips.

Having made the moulds they must be oiled on the inside, and the concrete may then be mixed. A good waterproof cement may be used and should be mixed up with clean sharp sand in the proportion of 1:2 $\frac{1}{2}$. The ingredients must be thoroughly mixed in the dry state, and then wetted down. The concrete should be of a good working consistency, neither too stiff nor too sloppy.

This concrete is poured into the moulds, tamped well down, and levelled off flush with the surface of the mould by sliding a dampened wooden straight-edge across the sides. Drawing C gives a sectional view through a filled mould. Having filled the moulds, they should be covered with damp sacking and allowed to stand for a week to harden off. At intervals the sacking should be re-dampened, and the hardened castings should later be turned out of the moulds. D is a sketch of a completed concrete casting for one end.

When the tank is ready for assembly, the help of an

(Continued next page.)



Assembled concrete aquarium with plate-glass panels slotted into the grooves provided and held by a pure cement mixture.

brown markings and the plant grows to a height of around six inches. I found that it flowered profusely and over a long period. The plants produced bloom from mid-May to the end of July. I have them in compost consisting of three parts loam, one part sand and one part fine cinder-ash in a position where they receive full sun until noon, and then partial shade.

Another delightful subject for the rock surround, where a position can be provided receiving full sun (dry and well drained) is the *Mesembryanthemum criniflorum*. It is rated as a hardy annual and the seed should be sown about mid-April. The flowers are like large daisies, but offer a wide range of brilliant colours, white, buff, pink, mauve, yellow, crimson and dark red, with shade variations of each colour. To obtain the best results a southern aspect free of shade is essential, for the flowers only open when receiving full sunlight. They grow to a height of about four to six inches and look their best when planted in clusters.

Autumn Tasks

Autumn is now with us once again, and the pondkeeper can find plenty to occupy his time during this season of the year—preparation of the pond for the Winter period, clearing the surround of spent Summer foliage, thinning out the sub-aquatics, weeding, top dressing and many other activities. Apart from this normal seasonable attention and maintenance it is also a good time for constructional work, which brings to mind the subject of paths in the water garden.

Surprising though it may seem, quite often it is the paths which let down an otherwise well designed and maintained water garden. The type of path used depends to a large extent on the general design and layout of the pond or ponds and the garden surround. For instance, the severe formal concrete path would look out of place in a set-up



The lovely St. Brigid variety of *Anemone*, a colourful garden form. *Anemone* photographs and that of *Mimulus* by L. E. Perkins. Picture of *Mesembryanthemum* by J. Stott.

designed to represent a natural and informal scene. Instead of blending with its surroundings, such a path would be conspicuous and become a dominant factor.

Drainage Important

Furthermore, whatever style of path is used, it should be well drained. Nothing is more unsightly or unpleasant than a path which holds water and takes a long time to dry out. When constructing paths, the foundations should be made firm and consist of good draining material which should be taken to a depth of at least 14 or 15 inches, particularly with the main paths. For gravel paths it is a good idea to have the surface cambered to offset quick wearing down in the centre. It also helps to hasten the surface drainage after heavy rainfall.

Stepping Stones

For the construction of side or secondary paths through the rock garden area of the surround, the use of stepping stones provides a quick and efficient way of making paths. It is important that the stones used are free of fissures or cracks. Soft sandstone is not generally satisfactory, because it tends to break down quickly under wear. A common mistake is to use thin, flat stones which are liable to split easily. Large solid stones should be used, which offer a flattened surface at one point and yet have sufficient bulk to enable them to be firmly embedded into the soil with the flat surface about an inch clear of the top soil. The distance between the stones should be approximately even, for easy walking on the path, but the appearance of informality is achieved by using stones of various shapes and slightly different sizes. Carpeting plants may be set in between and around the stones, producing a pleasing effect. Such plants as *Thymus serpyllum* or *T. lanuginosus*, *Arenaria balearica*, *Cotula reptans* and, for the edges, *Phlox subulata* and *Aubrieta*, make suitable subjects for this purpose.



Left: One of the most brilliantly and diversely coloured of all rock plants, *Mesembryanthemum criniflorum*. It is easily catered for provided a place in the sun and a well drained root run are offered. Below: Another delightful subject, this time for the low-lying rock pocket. It is *Mimulus*. E. T. Johnson.



August-September Issue

DUE to a printer's error the date-line on the front cover of *WATER LIFE*'s last issue appeared incorrectly as September-October, 1955. This should have read August-September, 1955, as was printed elsewhere in the issue. The current number covers the period October-November and the next issue, for December, 1955-January 1956, will appear early in December. We apologise for any inconvenience caused to our readers.

Diary of a Pondkeeper

Why Not Try Anemones?

Their Foliage and Flowers Can Add a Charm to the Garden Pond Surround

WHEN I moved into my present home last October I discovered, in one corner of the garden, a grand plant of *Anemone japonica*. Now, I am extremely fond of all the Anemones and my discovery gave considerable pleasure, especially as I had not previously grown this particular species. It had apparently been in the same position for several years and, finding conditions to its liking, developed considerably. It was, in fact, just ready for root division and I realised that several good plants could be propagated by this method from the one large root. This was just what I wanted as I would thus be provided with stock for the partially shaded background of one of my smaller rock banks.

I split up the root in the early Spring, after enjoying the attractive white flowers which bloomed well into the late Autumn, and easily secured five good sections from the original plant. They proved sufficient to furnish the particular area of ground and produced nice healthy plants which have put on good, steady growth during the Summer

By

J. Stott

De Cæn
Anemones

months this year. Before the flowers appear in the Autumn, the developing foliage provides a decorative display, for the leaves are comparatively large, an attractive shade of green, and shapely. The plant grows to a height of two to three feet and appreciates medium shade.

With its pleasing foliage in Summer and flowers in Autumn, *A. japonica* is a useful subject for the pondkeeper to include in the background of the rock surround where a large amount of loam can be offered. Although the flowers are either white or pink, there are several shade varieties of the latter—the near red of *Stuttgartia*, the medium pink of *Kreimhilde* and the delicate pink provided by *September Charm*.

Writing this article for the Autumn issue of *WATER LIFE* brings to mind that with the publication of this issue I shall have been in my new abode 12 months and, looking at the work which has been completed in a garden now very much altered in design compared with last October, and thinking of the work still to be carried out, I realise what a depth of meaning there is in the saying "Rome wasn't built in a day." My eventual idea is to transform the plot into an alpine and water garden.

But to return to Anemones, the Poppy Anemone (*A. coronaria*) is well known for it is popular as a cut flower. Its rich colour may be usefully employed by the pondkeeper if a little care is exercised. Too many will produce an over-coloured effect at the pondside. A few small clusters of the *De Cæn* and *St. Brigid* varieties here and there at convenient points will also provide a pleasing effect.

Three Species for the Surround

For planting in the actual rock surround where the well drained gritty compost is to their liking, *A. apennina*, *A. blanda* and the *A. pulsatilla* will offer considerable charm and delicate colouring and, for planting along the edge of the marsh area, the *Hepaticas* are ideal. Whilst on this subject, I might mention that our native Anemone (*A. nemorosa*) is well worth providing a little pocket in the lower parts of the rock surround where the more moist conditions prevail. Here, close inspection will reveal its exquisite charm and, if a little control is exercised to keep it in its allocated position, it will respond well to care and cultivation.

This season I have had a grand display from another subject eminently suitable for a low-lying rock pocket. It is one of the *Mimulus* varieties, *E. T. Johnson*. The flowers are buttercup yellow, lightly mottled with rich reddish

Home-made Concrete Aquaria

(Continued from previous page.)

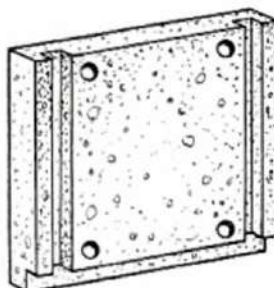
assistant should be obtained, and a rather wet pure cement mixture made up. Some of this cement is put in the grooves on the base, and the two glass panels put into position. The ends are added (cementing the glass and the bottom edges of the joints), the rods are passed through the various holes, and the nuts tightened to make the whole rigid. At this stage any minor "making good" with concrete can be done.

After the cement has hardened the temporary rods are



C

C is a sectional view through a mould filled with concrete. D is a completed concrete end of the aquarium prior to its being affixed to the base. The holes for the rods, which aid in assembly, are plugged with concrete.



D

removed, and the four holes in each end are filled with concrete. Any slight irregularities in the concrete can be remedied by painting over with a washy cement mixture.

The usual routine precautions regarding frequent washing and scrubbing out of the tank must be followed before the fish or other livestock are introduced.

Popular Goldfish

Fantail Variety

Characteristics of the Ideal Fish —
Hardy Qualities of the Metallic Form —
Getting Body Shape and Coloration

By Capt. L. C. Betts

Prizewinning Calico Fantail owned by Mr. V. Capaldi, of Bristol. Although a distinct variety as it is Telescopic-eyed, in other respects it demonstrates the desirable points of all Fantails.



IT is not generally realised that, Common Goldfish apart, the Fantail is the oldest of Goldfish varieties. What century it was evolved is not certain, but web-tail Goldfish have existed for hundreds of years. It came into being as a mutation from the Common Goldfish and the doubled tail at once excited attention and it was not long, relatively speaking, before the characteristic became fixed and a new variety came into being.

Contrary to general belief, what appear to be two tail fins and two anal fins are, in fact, a tail fin and an anal fin, both of which are divided in half. What happens is this. The single tail of the Common Goldfish holds its shape and rigidity by a series of segmented rays which spread outwards

from the caudal peduncle. These rays are paired and lie side by side. This is to give added strength to a fin which is used in an undulating motion as a means of propulsion.

The two tails of the Fantail are brought about by the two halves separating. The characteristic is not 100 per cent established and, as any breeder knows and finds to his disappointment, in every spawning a high percentage of fry fail to develop with the division fully extended to the caudal peduncle. Quite a number divide only in the bottom lobe, and the top lobe is joined. This is known as a Tri-tail and is not thought of very highly.

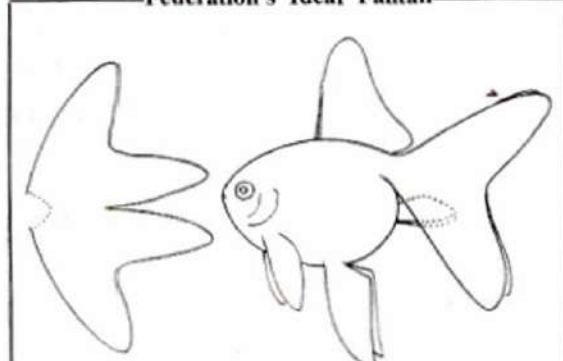
Other tail fins divide as far as the outer edge of the top lobe, when it becomes known as a Webtail. The present Federation of British Aquatic Societies' standard for the Fantail variety of Goldfish, lays down that . . . "The caudal fin is divided . . . united at base for one quarter of length." Whilst it is appreciated that with the edges joined for a quarter of the length, the two halves will be carried more stiffly and held more majestically, the recognition of a join at all is unsatisfactory for these reasons. Firstly, parents with fully divided tails are required in the breeding tank if this characteristic is to be maintained. Secondly, it is a recognition of a reversion factor for we know that the Webtail is the next step, and then the Tri-tail, before finally reverting to the Singletail. Thirdly, so few fishes appear in a spawning with the join a quarter the length of the fin that it seems a requirement without justification.

Metallic or Scaled Form

The most popular type of Fantail is the Metallic (Scaled) and not without reason. It is extremely hardy when well bred and reared and is as much at home in the pond as the aquarium. Because of the limited fin development, it is vigorous and very active. The Nacreous (Calico) and Matt forms are also well liked but, as in these forms in the other varieties, they are not quite so hardy as the Metallic.

The body of the Fantail is egg shaped which, with the stiffly held fins, sets the fish off in a most attractive way. As with all Goldfish, the head is blunt and short. The name of the variety correctly suggests that the tail should be fan-like when viewed from above. This effect is obtained by the forking in the tail, which should be decisive but not over-accentuated. The fork itself should be no more than one third the fin length, with the fin lobes coming to a blunt point. Too often one sees Fantails on exhibition with well rounded ends to the lobes and surprise is expressed that these fishes do not appear in the prize cards. The experienced eye of the judge can identify the undeveloped Veiltail

Federation's Ideal Fantail



POINTS

				Scaled	Calico
Body	..	..	..	30	25
Dorsal Fin	..	..	..	10	8
Caudal Fin	..	..	..	25	25
Pectoral Fins	..	..	..	4	3
Pelvic Fins	..	..	..	4	3
Anal Fin	..	..	..	7	6
Colour	..	..	..	10	20
Condition	..	..	..	5	5
Depotment	..	..	..	5	5

(Drawing, slightly reduced, and points table reproduced from the Federation of British Aquatic Societies' "Show Standards for Cultivated Fishes" booklet.)

and a Fantail is certainly not an undeveloped Veiltail. Another distinguishing feature which keeps the Fantail apart from the Veiltail is the way the tail is carried. As near as possible, the exhibition Fantail carries the upper lobes of the tail above the centre line of the body. Too often one sees the upper lobes either in line with or below the centre line and this is a bad fault. The breeder who hopes to hit the Fantail and Veiltail jack-pot simultaneously is wasting his time as each must be bred for separately.

Heredity and Feeding

With the type of fish well before us the question arises, can we rely on the heredity factor to achieve our ends or will feeding do it, or is a combination of the two involved? Personally I believe that heredity and feeding both play a part. Depth of body and general rotundity can be produced with heavy feeding of a carbohydrate nature but the adult fish is usually flabby, lacking vigour and susceptible to disease.

Provided the necessary factors are inherited, as would be the case with fish that are well bred, a rich diet of protein would bring out the desired characteristics and the fish would be firm fleshed and muscular. It is in this respect that the often abused Earthworm is so valuable. A Fantail reared on chopped Earthworms is a different fish altogether from one reared on porridge and dried foods. Everyone, at some time or other during the week, is compelled to offer dried foods but the chap that gets up early and digs the early worm from the garden, not only produces an attractive Fantail but starts the day off well for himself. One sees all too often a fish which has an unnaturally rotund belly and a knife-edged back. When this starts to appear in a strain it will not be long before that strain dies out, as it is a definite sign of deterioration.

The well-bred fish has almost as much flesh and muscle above the centre line of the body as below. Lack of fullness in the upper part of the body is usually a sign that the feeding is lacking variety and balance. Since Goldfish will eat crab, lobster, shrimp, cheese, spinach and desiccated

reddish-orange shade and the change is completed before the fish is six months old. This fish alone should find its way into the breeding tank, as the colour factor is well implanted.

Then there is the type which gradually turns from green-brown to yellow and, in old age, has an over-sheen of red-orange. These can be persevered with but the task is long and arduous and the results never seem to justify the time and effort.

And then there is the type which never turn colour at all. These are a dead loss and can be written off. Using newly-imported fish, I have found that those that are to become the reddest of all turn colour at three weeks and colour long before the Nacreous types.

Such a rapid change of colour in imported specimens does tend to throw into relief the length of time taken for many British-bred Goldfish to assume full coloration.

Heat, of course, accelerates the colour change but the extraordinary thing is that some of the newly-imported Metallic specimens produce young which change colour not only extremely early but without undue heat. Those that require heat for the change seem never to go beyond the yellow stage. Heredity, therefore, seems to be the major quality involved for the colour factor.

Hard and Soft Water

Two Types of Hardness and Ways of Rendering Water Soft

HARDNESS of water may be classified under two headings, namely, "temporary" and "permanent." The former is due to the presence of carbonates of the metals calcium and magnesium, salts almost insoluble in pure water but held in solution by the virtue of some natural waters having a content of carbonic acid (carbon dioxide), a physical characteristic.

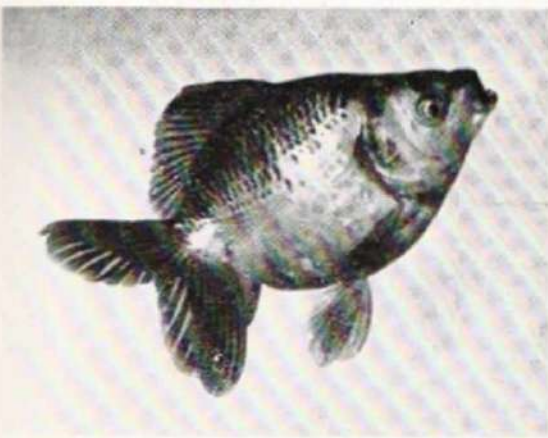
"Permanent" hardness is caused by the presence of the sulphates of calcium and magnesium and occasionally by the chlorides and nitrates also. All of these salts are extremely soluble in water, with the exception of calcium sulphate, which may be regarded as only slightly soluble, and more soluble in cold, than hot, water.

Combined Hardness

The combined contents of both "temporary" and "permanent" hardness of natural waters constitute, and are referred to as "total" hardness. "Temporary" hardness is so called because a modification of certain physical conditions existing in natural water may lead to the precipitation in part, or very nearly in whole, of the calcium and magnesium carbonates (present as unstable bicarbonates).

A simple way of reducing "total" hardness of water is by boiling, when the loss of carbonic acid will cause the carbonates of calcium and magnesium to be thrown out of solution. The precipitate formed is familiar as the hard white scale, or the soft white deposit, formed in kettles, especially in districts where the water has a high content of "temporary" hardness.

The hardness remaining in the water after boiling is the "permanent" hardness of the soluble calcium and magnesium salts. It is well known that calcium and magnesium salts precipitate soap and destroy its lathering power and potential detergent properties. Should the total hardness of a water



Photograph [L. E. Perkins]
Young Metallic Fantail during the process of colour change.

liver, besides all the well-known forms of dried food, it should not be difficult to work out a menu with Earthworms and algae as the basic ingredients.

Finally, since the Metallic form of Fantail seems traditionally the most popular variation, a word on colour would not be out of place. There are three main types of Metallic fishes. The most important is the one which is red/orange. This type usually turns a dark colour, almost black, at an early age. The black then starts to recede, giving way to a

be excessive it may be practically useless for domestic washing purposes. There are also other objections, of economic consideration, to the use of hard water for domestic purposes that need not be gone into here.

The fact that these salts destroy soap is made use of in analytical procedure in so far as standardised soap solutions may be employed roughly to determine the amount of calcium and magnesium present in water.

Large-scale methods of treatment for softening water are numerous and may range from partial softening to the production of water of zero hardness. Softening materials, much used in domestic appliances, are called zeolites and are synthetically prepared by the fusion of sodium silicate and sodium aluminate, or processed from naturally occurring Greensand.

Another type of zeolite material is formed when sulphuric acid is allowed to react with coal or lignite under controlled conditions. The softened water from units containing zeolite has no hardness, all calcium and magnesium salts having been converted into corresponding salts of sodium (base exchange softening) which have no soap-destroying properties. Such water is unpalatable and is also corrosive towards metals.

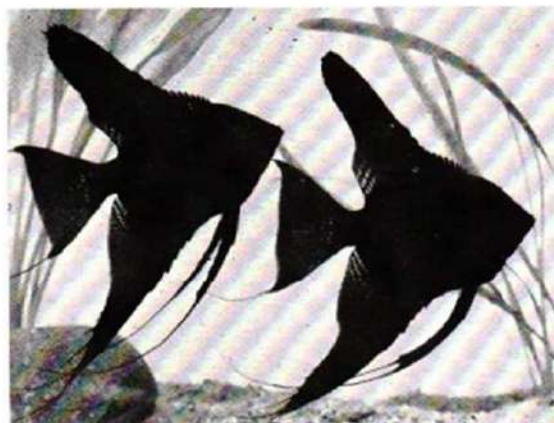
Softened water, much more nearly approaching that of naturally occurring soft waters in which very little mineral matter is in solution, may be obtained by passing hard water

through a mixture of synthetic resins which, unlike the zeolites, will completely demineralise the water and give a product resembling distilled water. Very small units containing these synthetic mixed resins in plastics squeeze filter bottles, are now on the market and are easily obtainable ("Tex" and "Wizard" bottles). At the present time, however, the cost of producing completely softened water from hard water by this method is no less than the cost of distilled water, bought at retail prices, as regeneration of the resins when exhausted in these bottles is impracticable and a replacement with a fresh cartridge of resins becomes necessary.

Adjustment of pH

Aquarists using any of the above methods for softening water, which include the partial softening obtained by boiling, must be made aware of the fact that the pH value of the processed water will, in all probability, need adjustment, whilst re-aeration will be essential before it is finally used in aquaria.

Furthermore, it must be remembered that both elements calcium and magnesium are essential in order to maintain plant life. Classification for hard and soft waters was given in an article of the series "Water—the Basis of Fishkeeping," which appeared on page 128 of *WATER LIFE*, June-July, 1954.—E.L.T.



Macabre Angels

Black Strains of Angel Fish Now
Being Produced in America

(Gene Wolfshelmer photographs)

own reaction to them—and he certainly waxes eloquent. "These new fish are truly beautiful and a wonderful addition to our hobby. I was given four young specimens and they reside in a place of honour in my fishhouse."

It seems that other breeders in the States are producing fully black Angel Fish and, as we go to press, Mr. K. D. Fawcett, of Epsom, Surrey, informs us that he has received three young specimens by air.

AMONG reports that black Angel Fish have been bred in the United States comes one from Gene Wolfshelmer—and with it several superb photographs of the novelty. Some of these particular specimens were on show at the 1955 Los Angeles Hobby Show placed alongside tanks containing the normal form and some partly-black fish which, up till then, had been the nearest to Black Angels seen in that locality.

James Ellis, from North Hollywood, produced the fish by putting together two drab, colourless Angels just to see what would happen. He had a lucky break. They bred, producing some drab youngsters, some normal, some partly-black and some as densely pigmented as those in the photographs. Only a few of the fully-black gems appear in each spawning but Mr. Ellis is hoping to build up a true-breeding strain.

We ourselves have not yet seen the colour variety so must rely on Mr. Wolfshelmer's



— Know Your Fishes —

No. 41. Marbled Cichlid

(*Astronotus ocellatus*)



[Photograph]

[Dr. G. Aurell]

The soft velvety appearance and the ponderous swimming movement of the Marbled Cichlid (*Astronotus ocellatus*) mask a nature which spells danger for smaller fish in its vicinity. Concealed beneath its cloak of apparent unconcern is an unremitting relish for live fish up to quite a large size. Yet, for all its unsociability, the Marbled Cichlid is popular with aquarists who can supply a large enough tank for it and who have the facilities to provide it with the large quantities of live-food it needs.

Overall colouring is unusual, for there is hardly a hint of the metallic sheen or the uninteresting "fish olive" which so often characterises other species. The scales are comparatively inconspicuous and suffused right over the body is a deep brownish tint, with a matt finish. Showing through are lighter and darker irregular areas which, when the fish is displaying at its best, are much subdued, the soft brown hue having the ascendancy.

Fins are dusky to match the body, and the rear parts of the dorsal and anal, and the entire caudal, are particu-

larly deeply shaded, sometimes appearing almost black. Against this sombre yet pleasing background a modest number of brilliant red spots fleck the body and head, and reddish marks frequently adorn the gill covers. Focal point of the colour pattern is a peacock-eye marking on the caudal fin base; it is black centrally with a red surround which has a thin black perimeter. The reddish marks of the males are generally brighter and some similar flecks are often present at the dorsal fin base in this sex only.

Marbled Cichlids grow to a massive size compared with the usual run of aquarium fish. A twelve-inch overall length is not unknown where the aquarium is large enough to allow full development. The mouth appears cruelly shaped and long before the Marbled Cichlid reaches its maximum size it is able to take fish at least 1½ in. in length. In fact, it is safer to allow *A. ocellatus* no other species as tank mates.

It seems to show intelligence, so far as fish are able, and can be trained to take food from one's fingers. Livefood is an absolute necessity, *Tubifex*, White Worms, Earthworms and live fish being eaten in large quantities. Temperature range is 70 to 82 deg. F.

No doubt due to its large size and its pugnacious disposition, the species has rarely been bred under aquarium conditions. Large tanks are needed for an attempt and certainly nothing less than 36 in. long will suffice. It breeds in the usual Cichlid manner, the eggs being laid on flat rock surfaces, etc.

The parents are partial to caviare, albeit their own prospective offspring, and it is safer to remove the eggs to an aquarium filled to no more than 6 in. with matured water. Fine aeration will keep water circulating over the eggs. When the young fish have hatched and absorbed their yolk sacs they should be able to manage freshly-hatched Brine Shrimps and fine *Daphnia* as a first food.

A. ocellatus is sometimes called the Peacock-eyed Cichlid on account of the eye-spot marking on its tail base but, more generally in Gt. Britain, it is termed the Marbled Cichlid. It is native to the Amazon, Paraguay and Guiana.

Class: Pisces. Order: Percomorphi. Family: Cichlidae. Genus: *Astronotus*. Species: *A. ocellatus*.

Floating Plants

By Roy Whitehead

WHEN setting up a home aquarium floating plants should not be forgotten. After all, the usual idea behind "furnishing" a tank is to simulate natural conditions as far as is possible and most natural areas of freshwater support their quota of floating plants. Even the humblest ditch often delights the eye with its attractive covering of bright green Duckweed. Besides completing the natural picture many of the floating plants have more practical qualities. Some of them provide a wonderful refuge for newly-born livebearer fry, and this is particularly important to those of us who are restricted to one tank and thus cannot isolate the gravid female parent or remove her subsequent family to another aquarium. Several of the plants described here are very good oxygenators and many provide a welcome addition to the diet of those fishes that have vegetarian tastes. They need adequate light and a moist atmosphere.

Duckweed (*Lemna*) is a floating plant that is readily available to most aquarists and, for the trouble of collecting it from the nearest pond or ditch, will soon reward its owner by fulfilling at least two of the desired qualities. At least a dozen species are known to botanists but even the most common, *Lemna minor*, will soon carpet the surface of the

water of your aquarium under the influence of light and warmth. It grows in clusters of three or four leaves, and Guppies and Mollies love to eat it. Goldfish also appreciate this vegetable food. If Duckweed is collected from natural waters it is advisable to make sure that it does not harbour any unwanted pests before placing it in the aquarium.

Small fry find *Riccia* or Crystalwort (*Riccia fluitans*) a valuable shelter when danger threatens. This plant is a good oxygenator, and most dealers offer it for sale quite cheaply or a small quantity can usually be obtained from a fellow aquarist. In common with many of the smaller-leaved floating plants, it spreads rapidly under a good light and it is advisable to thin out the bright green loose mass of leaves drastically from time to time.

Salvinia (*Salvinia natans*) is another floating subject which is easy to obtain. Once again, a good light is essential for its healthy propagation. Given this, the hairy oval leaves, which grow in small clusters, soon increase and have a diameter of over ½ in.

An attractive plant which is often seen in aquaria is the Floating or Water Fern (*Ceratopteris pteridoides*). Closely related to the Water Sprite (*C. thalictroides*), young plants appear on the fronds of the parent Water Fern in much the same way. Under moist conditions and plenty of light it soon multiplies. Bubble-nest builders in particular make good use of the debris arising from all floating plants and, indeed, often incorporate the living plants themselves in their nests.

Salmon Discus (*Ephippicharax longipinnis*)

Enjoyers of a Community Tank Life But
Extremely Sensitive to Unusual Disturbance

By R. W. Andrews

THE species *Ephippicharax longipinnis* has been available in London for some time, although it is usually listed under the popular name of Salmon Discus. The specimens which I possess came to me originally as *E. orbicularis*, but were later classified in their true category, *E. longipinnis*. These two species form a classic example of how easy it is to confuse "like" species at a first glance and, in this instance, even at a second glance.

As viewed in a tank, the dividing characteristic of *E. longipinnis* is the deep incurve in the length of the anal fin, as opposed to the straight edge in the other species. *E. orbicularis* shows much less black colouring in the front of anal and dorsal fins. Generally speaking, both species have a deep, laterally compressed body which glistens with an overall metallic silver coloration. The eyes are fairly large with a fleck of red to the top curve of the gold iris. Both fish show the typical Characin adipose fin.

Since first obtaining my *E. longipinnis* they have grown to an average body length of two inches and, at this stage, appear to be fully grown. They seem of a peaceful disposition and definitely enjoy and seek the company of several much larger and very boisterous Clown Barbs, which share their tank. They will even glide into a shoal of Barbs and almost snatch food from their mouths.

Yet, paradoxically, these same *E. longipinnis* show the quickest and greatest reaction to nervous shock, however slight, of any fish that I have ever known. I have found it absolutely necessary to use only the slowest movements

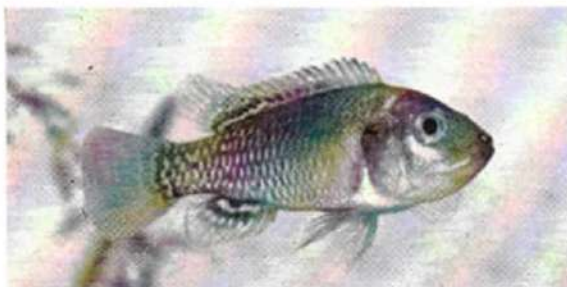
when anything requires attention inside their tank. Even when cleaning the outside of the front glass I have to keep an eye on these fish, for any departure from a slow, steady rhythm will start the fish wildly racing about the tank. Should the tension be sustained, they will quickly sink to the bottom and lay over on their sides in a "fainting" condition. All this can, and has, happened without the Clown Barbs showing any departure from their normal behaviour, other than to retreat from the point of disturbance.

Over a period of many years I have repeatedly observed that fishes which possess deep, laterally compressed bodies, e.g., Angel Fish and Black Widows (*Gymnocorymbus ternetzi*) in particular, are far more prone to nervous shock—light, noise or sudden movements—than fishes with cylindrical-shaped bodies.

Reaction to Shock

Their respective form of reaction to such shocks also differs greatly. In the case of fish with laterally flattened bodies, loss of balance, accompanied by no apparent sign of gill movement, is the final outcome. With cylindrical types of fishes, however, uncontrolled and frenzied swimming, or frantic endeavours to dig head-first into bottom gravel, ends in the affected fishes laying exhausted with gill movements greatly accelerated. Swordtails (*Xiphophorus helleri*) provide an excellent illustration of this behaviour pattern.

Feeding *E. longipinnis* provides no difficulty, as the fish



Egyptian Mouthbreeder—photograph by W. S. Pitt

THE Egyptian Mouthbreeder (*Haplochromis multicolor*) is, in my opinion, the ideal Cichlid for the aquarist with just a few aquaria. As it attains a maximum length of only 2½ in., the species is suitable for keeping with any of the popular tropical fish, and it does not show the usual Cichlid tendency to uproot the plants. *H. multicolor* live quite happily at any temperature between 72-82 deg. F. Slightly alkaline water suits them best and the degree of hardness of water does not appear to worry them unduly.

Feeding them presents no problem, either; they will take dried foods, but to bring them into breeding condition plenty of White Worms, *Daphnia*, chopped Earthworms, etc., should be used.

The Latin name, *Haplochromis* ("plain chromide") *multicolor* ("many coloured") aptly describes the adult fish. The female is rather a plain Chromide fish but shows a little colour at breeding time. The male is a slightly smaller fish and has no definite colour pattern, but is flecked with several shades of blue, yellow and red. As growing young-

Cichlids by the Mouth

Strange
the E

sters, the males can be identified from the females by the reddish tip to the male's anal fin.

Care must be taken when buying young fish to ensure that they are *Haplochromis multicolor*, and not the young of a much bigger type of mouthbreeder which later in life attains a length of 5-6 in.

For anyone who wishes to watch the unusual but wonderful breeding habits, I would advise a 24 × 12 × 12 in. tank, the bottom of which is covered with 1 in. of fine gravel and set with a few stones or plants.

Preparation of Spawning Sites

During the courting period numerous craters are dug in the gravel by both parent fish. When, at last, the spawning time arrives, usually 2-3 days after they have been moved into the breeding tank, the male circles over the selected crater and entices the female to deposit a batch of eggs. He fertilises the ova which are then quickly picked up by the female and stored in her capacious mouth.

They are kept there, not only until they hatch, but until they are free-swimming and the yolk sacs fully absorbed. This takes about 12 days and the number of eggs carried is usually 80-100. During the incubation period, the female refuses all food thus becoming thin and wasted in the body, but her head is enormous.



[G. J. M. Timmerman]

Recently has the above species been identified as *Ephippicharax*. Previously it was known as *E. orbicularis*, a fish of deeper body, rounder fin straighter on its exterior edge and with much less black colour.

will take an all-round diet of dried or livefood. I have found it best to give only small feeds at any one time, for the fish appear to take food only whilst it is suspended on or in the water. No bottom feeding has been observed.

Regarding tank set-up, these fish do seem happiest and most active with a thick layer of floating plants to form a good top cover. An average temperature of between 70 and 75 deg. F. appears sufficient to keep them in good, active condition.

iful!

and Wonderful Breeding Procedure of
Egyptian Mouthbreeder (*Haplochromis multicolor*)

By D. Ince

After two or three days the eggs can be seen clearly through the tissues of the bottom jaw, and the female frequently moves them around as though she were chewing them. The male should be removed after spawning is completed. The first sight of the young fry will be a hind view as the last few disappear into their mother's mouth! This occurs at the slightest noise or strange movement and also at night. After two or three days there will be no room in her mouth for them all so you will get your first real glimpse of the fry.

At this stage I remove the female and the fry then act normally without the refuge of the mother's mouth. With plenty of good food the female is soon her old self again.

The fry can be fed with Brine Shrimps for the first food and, as they grow, ground White Worms, *Tubifex* and small *Daphnia* will be eagerly accepted. Then small feeds of dried food can be introduced.

For the aquarist who has no tank immediately available at the time of spawning, I find that they will spawn in the community tank, from which the female can be removed to a small tank, 12x6x6 in. or similar size, where she will carry on as described previously, despite the transfer.

Diminutive *Rasbora* Species

Mrs. M. Hemming Describes the Care
And Propagation of *Rasbora maculata*

SEVERAL years ago, when visiting a well-known commercial Aquarium, my attention was drawn to a two-foot long tank containing tiny fish quite unknown to me. Their appearance and presentation had to be seen to be believed. Among an abundance of rich green vegetation and artistically arranged rockwork, the "living gems" were darting to and fro. The whole effect was heightened by the subdued glow of a red light in the canopy.

I found out as much as I could about them, and was told the fish were called *Rasbora maculata*. They were some of the first importations, had not been bred, and apparently would not be too easy to breed. As I am always very keen to try and breed the more difficult species, I naturally fell for this and purchased just three pairs as, at that time, they "cost the earth."

Descriptions of *Rasbora maculata* could be confusing as I find the body colour varies greatly in different lights. The



[Photograph]

[G. J. M. Timmerman]

A tiny but colourful tropical fish species, *Rasbora maculata*.

general colouring appears to be a pinky-red and the underparts have a greyish white hue with two or three black spots on the gill plates. The fins are reddish with a black spot on the anal fin. When the male is in breeding condition his whole body is a glowing deep red. Both sexes are quite small, an adult male reaching a length of $\frac{1}{2}$ in. and a female, about 1 in.

I took my fish home and put them into quarantine (I think this is most important for all new fish), then conditioned them with small *Daphnia*, finely chopped White Worms and a little dried food. In a week's time I noticed that the females appeared to be filling out so I decided to try to breed from them.

There was very little information to be had on this subject, so, having no experience in breeding similar species at that time, my first few attempts were disappointing and were, in fact, complete failures. When eventually I did succeed, despite notes made at each attempt it was still more by trial and error that I managed to rear a very few for exhibition. Since those early days I have bred the species quite successfully using the following method.

I consider the best results are obtained by conditioning more than one pair in a tank, as they appear to prefer to choose their own partners. When trying with single pairs the results never seem as satisfactory.

(Continued next page.)

During the conditioning period, when the females show signs of filling up with roe, prepare the breeding tank. I use a tank 16x8x8 in., which is quite large enough for three pairs of fish. Fill it with thoroughly clean acidified rain water with a pH of about 6.6. This is obtained by adding peat water to the rain water or by passing the rain water in the tank through a corner filter packed with peat and glass wool. An immersion heater is fixed to the centre back of the tank, and the submersible thermostat hung in the back corner set to allow the temperature to fluctuate between 78-80 deg. F. A few small *Cryptocorynes* are weighted at the back, and a bunch of prepared Sea Cypress (I used green "Aquafern") each side of the heater. A 15-watt light is placed overhead. Curiously enough, I find these fish seem to spawn better in the dark Winter months than the lighter Summer months. No gravel is used on the bottom.

When the pairs are put into the breeding tank, for the first day or so they swim aimlessly about, then stay absolutely still in the water, usually in twos. Suddenly they appear to take an interest in each other, and the usual chasing begins.

The roe in the females can be seen very clearly with the aid of a magnifying glass. The tiny eggs are packed tightly together in three rows. As a rule the female which is ready first will swim to the bottom of the Sea Cypress with her chosen male closely beside her and select a particular spot, coming to rest on a low frond of the material. A slight quivering and an egg is released to be fertilised by the male, who pushes her broadside out of the way. I have watched a female through a magnifying glass actually depositing an egg, which was done very slowly and seemed to take some little time, unlike other egg-layers who release several eggs at once.

At this stage I carefully remove the other two pairs so that the spawning can continue. This takes about four hours, when from 35 to 40 eggs will have been laid and, although they are so tiny and transparent, they can easily be seen on the green fern when looked at with the magnifying glass. After the spawning has finished the fish should be removed and returned to their usual tank.

The incubation period is approximately 24 hours; then begins the tantalising task of trying to count the fry. It is very difficult to spot them even with a magnifying glass although they look like minute dark splinters. It would appear they prefer to hide away in the fronds of the fern. Around the third day after hatching they become free swimming and all the egg-sac is absorbed.

The provision of the right kind of food at this stage is most important. I prefer plenty of green water for the first three days but, as it is not so plentiful in the Winter months, cultures of *Euglena* are given, and the fry thrive on them. An eggcupful three times a day will tinge the water a faint green, which will clear as the *Euglena* are eaten. Watch the youngsters to see that they always appear well filled with food. After the first week larger Infusoria can be given, such as that obtained from the lettuce-eating *Ampullaria* snail. Brine Shrimps, Mikro-worms and small *Daphnia* can be introduced progressively as the fish develop. In addition they can be given a little finely sifted dried food later on.

At one month old, if really well fed, the fry will be quite $\frac{1}{2}$ in. long, and a successful spawning should consist of about 25 youngsters.

It is interesting to note that young *Rasbora maculata* are a pinkish-white all over, which gradually turns more red as they grow older.

Aquatic Plants

WITH *Iris kaempferi* one gets a double effect. Bold, typically Iris, sword-shaped leaves grace the pool edge for a long season and then from June to August bursts a riot of flowers in colours ranging from white through grey to red and violet. It is one of those rewarding plants which responds readily to generous treatment, producing larger and lovelier flowers the richer the soil it has.

I. kaempferi is a little exacting in its water requirements disliking its feet to be wet in Winter but thoroughly relishing a generously moist situation in Spring and Summer. If it is felt that one cannot do without *I. kaempferi* in the marsh garden, and such an attitude is quite understandable with so lovely a subject, then try to pander to its wishes by lowering the water level in the pond during the Winter and raising it again in Spring so that the adjacent marsh receives a handsome overflow for the warmer months.

Flooding in Native Lands

This appreciation of water during the growing period is no idle fad but is closely allied to the conditions prevailing in its native Oriental haunts which are flooded in Spring and Summer.

To get flowers of the finest quality a soil consisting of two parts rich loam to one part well-rotted manure should be used. This Iris is a lime-hater, so avoid chalky situations. Sun is very much appreciated.

The characteristic shape of an individual bloom can be seen quite clearly from the photograph. The flowers are large and carried about three feet high. Apart from the delicacy of the whites and the richness of the mauves and reds there are many intermediate pastel shades of great refinement.

Clematis Iris

(*Iris kaempferi*)

Individual plants may produce variegated flowers. Double-flowered varieties produce the largest blooms, some being 9-10 in. in diameter. A distinguishing feature of *I. kaempferi* leaves is a prominent mid-rib.

Propagation is effected by division of the rhizome in early Autumn or March. If plants are being purchased, September is a good month to take delivery. Quite a lot of fun can be had growing *I. kaempferi* from seed but it is a lengthy process and it is unlikely that there will be any flowers produced before the third season. When they do bloom the wait is generally worthwhile for there will no doubt be a fine variety of colours. Fresh seeds are sown in Autumn and they germinate in the Spring. A moist situation is required.

These Irises will grow in a flower border away from a pond but they should receive adequate water and be provided with a soil rich in humus.

Among the very many varieties currently available are Akashi (blue double flowers), Sano-watashi (white with golden centred double flowers), Shimaya-no-tsuki (dark purple-violet flowers), Tsuru-no-kegoromo (purple, blue-flecked, single flowers) and Samidare (beautiful white and purple single flowers).





Star of the Goon Show Falls for Fish

Six-foot Long Aquarium and Extensive Garden Pool
at HARRY SECOMBE's Surrey Home

HARRY SECOMBE, versatile star of radio's popular Goon Show, is no mean hand at fishkeeping. Since taking up residence in Sutton, Surrey, early last year, his interest has gradually developed. The previous owner of his present home had a 72 x 24 x 25 in. aquarium in a wall recess of the lounge and Harry Secombe could see its decorative possibilities. He solicited the help of Mr. N. Lumley, a member of Sutton & Cheam A.S., and created a home for tropical fishes which has evoked the admiration of many experienced aquarists and from which have come several fish that have distinguished themselves on the show bench.

At Kingston Aquarist Society's Exhibition last year a Schuberti Barb took first

prize in its class, and was also chosen as the best tropical fish and the best fish in the show. This success was followed up at the Association of South London Aquarist Societies' Exhibition, where he gained first and second awards with a pair of Neons and *Anostomus anostomus*, respectively. More recently, he had two fourths with a Neon and a Harlequin at the National Aquarists Society's 1955 Exhibition.

Mr. Secombe again entered the A.S.L.A.S. Exhibition this year and won a first and a third with Schuberti Barbs and Harlequins. He also distributed prizes at the Federation of Guppy Breeders' Societies' September event.

His aquarium is situated on the right-hand side of the fire-breast and extends through the wall into the garage. A 5 in. picture frame conceals the angle iron of the tank. For normal topping up of the water level, a 1/4 in. controllable feed pipe from the coldwater supply is used. Heat is provided by three standard immersion-type heaters, and is controlled by an external thermostat fitted on the end glass in the garage, thus keeping visual equipment to a minimum.

The lighting created a problem as there was very little room between the aquarium and the brickwork, with oak beams running from back to front, and an opening on the back of the aquarium of only a few inches wide, enough to allow an arm to pass through comfortably. It was decided to

use a six-foot, peach-coloured fluorescent tube, but this was only possible if it passed through the oak beam at a point running central to the width of the aquarium.

Though it was obvious that this would not be the ideal position to give full benefit to the plants, it was found on fitting that it gave a pleasant effect when viewed from



SECOMBE IN DUPLICATE—his keen interest reflected in the 6 ft. long aquarium.

the lounge. In view of the position and limitation of the light, *Cryptocoryne cordata*, *willisii* and *beckettii* were used as the basis of the plants, Giant Sagittaria and *Hygrophila* being planted for back-

RECESSED FOR EFFECT

A dominant feature of the lounge is the six-foot long aquarium stocked with a variety of quality tropical fish and fitted with an artistically designed background. A cream wooden frame, 5 in. wide, conceals the front edge of the tank.



Harry Secombe and his Boxer against the background of his extensive garden pool.

ground where a little daylight could reach them from the windows of the garage doors. A decorative background was painted on the glass back panel.

A selection of young fish, including Angels, Barbs, Neons, Harlequins, Leeri Gouramies, Zebras and White Cloud Mountain Minnows, was introduced initially and the fish soon thrived in their spacious quarters.

However, it quickly became apparent that the fluorescent unit, in its fixed position at the centre of the tank, was not going to throw sufficient light to the rear to maintain the *Sagittaria* and *Hygrophila* in a healthy state. Because of the small space between the brickwork and the angle-iron frame of the aquarium, two pieces of 1 in. x 1 in. wood fixed into spring clips were put across the aperture, with 60-watt strip lights in each, making it possible to give extra light to the plants at the back, as well as enabling the lights to be moved independently for cleaning purposes.

The present fish stock includes excellent specimens of Scissortails, Red Swords, Angels, Salmon Discus, Harlequins, Schuberti Barbs, Cherry Barbs, Neons, Tiger Barbs, Zebra Fish, Black Mollies, Leeri Gouramies, White Clouds, Lyretails and *Anostomus anostomus*.

Trophies Awarded

The aquarium forms a focal point in a tastefully furnished room. Among the few ornaments allowed to intrude are Mr. Secombe's silver cups and medallions awarded to him for his wins with show fish—a fine indication of the pride with which he views his fishkeeping interests.

Although he has little time to try his hand at breeding tropical fish, he has been very successful in breeding a considerable number of Golder Orfe and Goldfish in a large ornamental garden pond. Approximately 50 ft. long and 20 ft. across, the pond is bridged in the centre where it narrows.

It is constructed with a waterfall at one end and a fountain at the other. Water is circulated through the fountain and waterfall at the rate of 1,000 gallons an hour and the whole arrangement blends with the lawns, fruit trees and rose bushes of a spacious garden. Aquatic and moisture-loving plants include *Egeria densa*, *Myriophyllum spicatum*, Water Iris, Variegated Rush, Water-lilies, and Great Reed Mace.

(Continued on page 247.)

Current Research

Living Coelacanth - an Eye-witness Account

By Alastair N. Worden, M.A., B.Sc., M.R.C.V.S., F.R.I.C., M.I.Biol.

THE recovery off the Comoro Islands of the eighth Coelacanth since the monumental finding in 1938 was recorded earlier this year in *NATURE* (issue of February 26, 1955, 362) by Prof. J. Millot, Director of the Institut de Recherche Scientifique de Madagascar. This specimen was described as not only the finest yet, as regards both state of preservation and size, but also the first near-adult female specimen to become available for scientific study and the first Coelacanth to be observed alive.

The specimen in question, was pulled in from 140 fathoms at 20.00 hrs. on November 12, 1954, by two fishermen in a pirogue then about 1,000 metres offshore, and opposite Mutsumudu jetty. The fish took the bait, a hunk of "roudi"—*Promethichthys promethis*—and was led to shore by means of a cord passed in through the mouth and out through the gill-opening and of the line, which remained attached to the front portion of the floor of the mouth. On arrival a whaler was sunk, as pre-arranged, in order

to provide an "aquarium" measuring about 700 x 150 x 80 cm. The bung was removed from the bottom of the boat, to provide a small but continuous current of water, and every half-hour the whole boat was rocked violently to facilitate renewal of the greater part of the water. Escape from the top was prevented by a net.

Prof. Millot's translated remarks read: "Throughout the night—which the delighted population of Mutsumudu passed in singing and dancing to celebrate the capture—the Coelacanth was watched over with admirable care by the *chef de circonscription* with his *adjoint*, M. Solere. It seemed, although quite bewildered at the sequel to its ascent to the surface, to be taking the situation very well, swimming slowly by curious rotating movements of its pectoral fins, while the second dorsal and anal, likewise very mobile, served together with the tail as a rudder."

"After daybreak it became apparent that the light, and above all the sun itself, was upsetting the animal very much, so several

tent canvases were put over the boat to serve as some kind of protection. But despite this precaution and the more or less constant renewal of the water, the fish began to show more and more obvious signs of distress, seeking to conceal itself in the darkest corners of the whaler."

Prof. Millot himself arrived by air during the afternoon in time to see the last movements of the fish, which measured 142 cm. in length and weighed 41 kg., or just over 90 lb. He was impressed by the exceptional mobility of the Coelacanth's pendunculate fins, and by its extreme photophobia—in his own words "the sunlight appeared literally to hurt it." He considered there was no doubt that death was brought about by decomposition combined with rise in temperature.

Earlier studies had indicated a temperature difference during daytime of 26 deg. C. between the stratum frequented by the Coelacanth and the surface water. A great trolis-work cage, in which the fish could be placed on capture and which could be kept submerged at a depth of 150-200 metres and hauled up only for observational purposes, was said to be projected for future work.

In *NATURE* for September 3, 1955 (176, 473), Prof. J. L. B. Smith of Rhodes University, Grahamstown, who was concerned with the original amazing finding in 1938 of these "living fossil" fish, makes some interesting comments on the French observations and finds it difficult to believe that their failure to keep the fish alive for more than a few hours was due to the reasons adduced by Prof. Millot. He points out that large fishes taken alive after a struggle on a line, even with no visible laceration, rarely live long—certainly not in aquaria. Even when liberated, such fish usually die. Curiously enough, fishes taken by harpooning, even when extensively damaged, show a greater survival-rate than those taken on hooks.

Survival Period

Smith considers that Coelacanth caught by net or trap and kept in a closed vessel would almost certainly have a greater chance of survival even at normal pressure. He points out that after being hauled to the surface in a trawl net near East London the first Coelacanth lived on deck for more than three hours, out of the water, on an unusually warm day. Smith says that only those who have experienced a night of celebrations such as those at Mutsumudu can have any idea of the noise and lights, and that the Coelacanth must have passed the night in a state of high nervous tension. What the French considered to be "photophobia" could, in his opinion, be no more than the natural uneasiness that any large and intelligent fish would experience as unfamiliar surroundings and objects became increasingly obvious from dawn. He very much doubts the accuracy of the somewhat precise estimates of the depths at which the various Coelacanth are stated to have been caught.

From the fact that the first egg-bearing Coelacanth was found to contain a cluster of eggs at all stages of development, such as may be observed in a fowl or in oviparous sharks, Smith anticipates that Coelacanth will be found to have egg-cases like those of Elasmobranchs.

One hopes that nothing is being lost in the study of Coelacanth through lack of full international co-operation.

From Continental Journals

By H. O. Munro

Are We Giving Encouragement to Youngsters?

WHEN reading Continental journals, and particularly the German ones, I cannot help noticing with envy the great enthusiasm with which aquarists abroad carry their hobby to the public; how even small towns have vigorous clubs which are quite capable of organising public shows which will last a week or even longer. I cannot avoid pondering why that should be possible in Germany and not to the same extent here. I feel that one of the reasons is the approach German aquarists have towards the coming generation.

From small notes and club reports it appears again and again that the clubs abroad see it as one of their foremost tasks to get the younger generation seriously interested in the hobby. They achieve this by close co-operation with the schools and educational authorities. They give advice and active help in the installation and maintenance of school aquaria and vivaria, they give lectures and lend literature to the youngsters. I feel that this is an example which ought to be followed by far more clubs in this country. It is easy enough to create the initial interest in the youngster—after all every boy goes out at one time or other with jam jar and net to catch a few "tiddlers" or some other water life, to take it home and observe what happens. More generally, however, the interest soon fades when the aquatic animals die after a few days. Properly directed, many a youngster will take up the hobby seriously.

Certainly activities of this kind involve quite an amount of additional work, but it will contribute greatly to secure the continuation of the hobby and a number of enthusiastic youngsters will live up club life considerably.

In a club report from Munich published in *DATZ* for July, 1955, I found some most interesting details of experiments with

the Electric Catfish, *Malapterurus electricus*. The well-known German aquarist, Peter Chlupaty, gave a lecture on his experiences with this fish, which is not often seen. A native of tropical Africa, it requires relatively high temperatures, up to 82 deg. F. The Electric Catfish is of cylindrical shape with small eyes, three pairs of whiskers, and has a greyish colour. It possesses no dorsal fin. The outstanding feature is, of course, the electric organ which consists of a great number (some two million) of flat cells which are all interconnected by nerves—that finally end in the spinal cord. The electric organ is used to help the fish, which has poor eyesight, in finding its way about and also in discovering its prey. The electric shocks administered by the Electric Catfish are up to 350 volts. The fish which P. Chlupaty acquired measured only 1½ in., but, even at that size, it could administer rather irritating electric shocks when a hand was put into the tank. Otherwise the fish was very tame and took food willingly from his fingers. Food consisted of Earthworms, *Tabifex*, Mosquito larvae, fish and raw meat.

When the fish had reached a length of just over 2 in., a large fish referred to as *Polypterus*, of 10 in. length, approached the Catfish in its hide-out under a big stone and received such an electric shock that both fish and stone literally flew through the water. This seems to prove that the fishes will use their electricity as a means of defence. (Such an observation appears to contradict earlier investigations by Ladiges who found that when Electric Catfish were attacked by other fishes they did not use their electric organs.) The growth of Chlupaty's Electric Catfish seems startling; from 1½ in. in August, 1954, it reached some 11 in. by March, 1955. In Africa fishes up to 34 in. long are reported to have been found.

Aquatic Press Topics

By L. W. Ashdown

Standing on their Heads

A ROBUST yet remarkable Characin, which normally rests and swims with its head inclined 45 deg. from the horizontal, is *Chilodus punctatus*; not unnaturally, it has come to be known as the Headstander. Its breeding under aquarium conditions has not proved easy but a German aquarist, Georg Feigs, reports success in the July issue of *THE AQUARIUM* (U.S.).

Only sex differentiation is the slightly longer and fuller body of the female. For the attempt ten full grown fish were placed in a 40 in. long aquarium. The left-hand quarter of the aquarium was planted with *Cryptocoryne harteliana*. In the next quarter were placed several flat stones and the remaining half of the tank was carpeted with *Riccia*, anchored by small stones.

After a few days the fish spent most of their time in the clear area of the tank and rarely swam into the mass of *Cryptocorynes*. The water was filtered over basalt chips and peat. It was clear but slightly yellowish, soft and at 77 deg. F. Floating Fern and *Riccia* on the surface subdued the light from a warm-white fluorescent tube. Within a few days driving was noticed, which seemed to suggest that conditions suited the fish and they were given *Daphnia* and *Cyclops* as food.

Mr. Feigs realised that a problem would present itself when eggs were laid. How would it be known that the fish had actually spawned if the eggs were crystal-clear and dropped over the bed of *Riccia*? A few days later he received his answer, for, in the *Riccia* near the front glass, was a small white object which, when examined closely, proved to be a fungused egg. Removal of the *Riccia* revealed some 30 others. They were large and 13 of them showed signs of life.

Filtering the Water

The eggs were siphoned out into a glass aquarium containing water at 77 deg. F. which was kept clear by means of a filter. Mr. Feigs was then away for two days and, on his return, found the thermostat had failed and the temperature in the aquarium was over 90 deg. All eggs appeared to have died and just one lone, newly-hatched Headstander survived. When its yolk sac was absorbed it adopted the typical head-down position and took its first meal of Brine Shrimps.

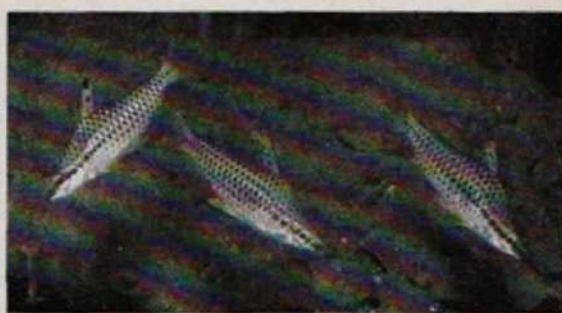
Whilst this breeding result was interesting, it was hardly rewarding, so efforts were again focused on the breeding tank. In place of anchored-down *Riccia* green nylon yarn was used to cover 80 sq. in. of the aquarium bottom. Two weeks after the tank was set up a fungused egg was noticed in the yarn. The mass of nylon was lifted and shaken and from it dropped a large number of light brown eggs. They were siphoned into a net of small enough mesh to hold the eggs but large enough to allow mulm to pass through. The eggs were placed in a glass aquarium with a water depth of 12 in. and temperature of 79 deg. F. An inside filter, loaded with unwashed peat moss and basalt chips, kept the water clear.

A rough count revealed there were about 300 eggs, of which 50 were fungused and, therefore, removed. At the time of transfer they were judged to have been laid about 12 hours. They began to hatch

Headstanders (*Chilodus punctatus*) at the angle they usually adopt when swimming and resting. Adult specimens have a length of three inches.

Photograph]

[L. E. Perkins



on the fourth day and, on the sixth, with yolk sacs absorbed, the fry became free-swimming. Rearing the young fish proved something of a headache as they refused to search for food and ate only that which collided with their snouts; *Cyclops* nauplii were too nimble and so feeds of Infusoria and Brine Shrimps were given. Small *Daphnia* were taken after three weeks and, at this stage, 126 young fish were counted.

Two points of interest are the breeding dress of the fish and swelling of the eggs.

When the parent fish were engaged in chasing prior to spawning the lateral black line disappeared, as did the spot in the dorsal. Instead, two "pea-sized" black spots showed on each side of the forepart of their bodies and the anal and adipose fins were dark tinted. Although actual spawning was not witnessed, these colour changes appeared to indicate its imminence. The swelling of the eggs resulted in almost fully-developed fry emerging from the enlarged ova.

Providing the Right Planting Medium

AS we observed in the article "Culture of Unusual Aquatic Plants," in the last issue (p. 195), A. Wendt does not recommend a rich compost to start off aquarium plants because a poor planting medium will encourage better root formation. For a starting mixture he recommends one part of clay to seven parts of sand. As soon as the first leaf shows up, the time for a richer mixture has arrived, and the method the German authority on aquarium plants uses is both ingenious and startlingly simple. He rolls little balls of clay, approx. 1 in. in diameter, and dries them in the sun. These are placed near the root of the plant and quickly pushed into the compost with one finger before they can dissolve and cloud the water (similar to the application of fertiliser tablets to garden and pot plants). The planting medium can thus be enriched until, for the fully-grown plant, it reaches a proportion of four to five parts of clay to seven of sand.

As a planting medium a mixture of gravel or sand, clay and charcoal was mentioned last time, and the proportion of charcoal recommended by Wendt is 1/15th to 14/15ths of the sand/clay mixture. Hydrated coal, as used for filtering, is particularly suitable. Wendt does not advocate ordinary plant compost, similar to that for pot plants, as this will invariably start to rot and develop gases which attack the fine roots of the plants until the plant eventually dies.

These methods of culture are specially recommended for plants of the *Aponogeton* Genus, though others will benefit as well. A rather unusual, and less known, *Aponogeton* species described by Wendt is *A. bernierianus* (Decaisne). A native of Madagascar, the plant somewhat resembles the famous Lace Plant *Aponogeton fenestratus*, and the older leaves especially tend to develop holes. It is more easy to cultivate, however. The tuber is ball shaped and approximately 1 in. in diameter. The leaves are all submerged and are light to deep green, growing up to 8 in. long. The number and density of the "windows"

in the leaves vary greatly with the individual plants. The plant will bloom readily, the flowers being formed on a stalk of 15 in. or more in length, above the water level. The flowering stalk usually splits into two or more and carries numerous small pink flowers.

During the active period *Aponogeton bernierianus* likes temperatures between 68 and 72 deg. F., but during the rest period, from November to February, temperatures between 65 and 68 deg. F. are more beneficial. Higher temperatures, up to 78 and even 80 deg. F., will encourage the formation of flowering shoots if restricted to short periods during the Summer. Such temperatures should not, however, be maintained during the whole year.

A. bernierianus can only be propagated from seeds. The bloom is bisexual but, though natural fertilisation will take place occasionally, artificial fertilisation is strongly recommended to ensure success. The tank with the flowering plant has to be covered with a glass cover-plate to ensure sufficient moisture, as the blooms are inclined to dry up in normal room conditions. Artificial fertilisation is executed with the aid of a fine brush or a chicken feather. After about two weeks the fertilised ear begins to sink back into the water. To ensure a full harvest of the seeds it is now best to cut it off and place it in a jam jar which is left floating in the tank. When matured, the seeds will float for a few days on the water surface, thanks to a bladder which soon dissolves, however, and lets them sink to the bottom of the jar.

Unless it is intended to sow the seeds out right away the temperature of the water has to be lowered to about 60 deg. F. at this stage. To encourage germination, the temperature has to be brought to 78 deg. F. with a very low water level, which is gradually increased as the plants develop in order to ensure that the leaves are always covered by water. Seeds should be planted just over 1 in. apart in poor planting medium and the plants have to be thinned out as they grow and get into each other's way.



The Editor is not responsible for the opinions expressed by correspondents.

INTERNATIONAL FEDERATION

SIR.—Since our inauguration in April of this year, the International Federation of Aquarium Societies has been attempting to organise all clubs in the United States and Canada into one group. Our reasons are many, the foremost of which is programme planning and furnishing suitable material in that direction to all member clubs.

We intend to implement this plan as soon as possible, providing printed material, films, lists of guest speakers and tape-recorded talks. Later we hope to start a youth movement within the hobby.

Our activities are now well-known to American clubs. I hope that we shall be able to make contact with Canadian and European friends since we desire their membership. There is much common ground and we can exchange much in the way of information so that all may enjoy fishkeeping that much more.

Cincinnati,
Ohio, U.S.A.
(Mr. Abel is both director and publicity chairman of this organisation. Its secretary, to whom interested societies should write, is Mrs. A. Marshall, 618, Beverly Drive, Fullerton, California.—Ed.)

INVITATION FROM BRUM

SIR.—As there seems to be considerable interest shown by your readers in microscopical subjects, particularly appertaining to freshwater life, I am venturing to extend to all in this area an invitation to come along to any of the meetings of the Birmingham Microscopical and Naturalists' Society.

Since moving into the buildings of the University of Birmingham, the society has had considerable leaning towards the study of freshwater life. We are collaborating with the Extra-Mural Department of the University in a series of courses on limnology.

138, Farren Road, A. G. SABELL, D. Opt.
Northfield,
Birmingham, 31.
Hon. Secretary

PROGRESS IN BAHREIN

SIR.—The Bahrain Aquarist Society was formed in August, 1954. Pending the arrival of equipment ordered from the United Kingdom, meetings were held somewhat irregularly. The tanks and other apparatus have now been received and the society is functioning normally. In addition to committee meetings, general meetings are held every two weeks.

We have applied for affiliation to the Federation of British Aquatic Societies and we have been in correspondence with the Pet Trade Association.

Several of our members have some excellent aquariums in which are contained

the types of tropical fishes with which most of your readers will be familiar. There is only one kind of freshwater fish available locally, i.e., *Aphanius dispar*, suitable for aquariums. Some of our members are studying the habits of this species.

Fishponds are out of the question in this part of the world as they are potential breeding places for parasites. Fortunately, all our houses are air-conditioned so the heat of the water in indoor aquariums presents no problems. We are able to keep the average temperature range down to 75-80 deg. F.

Bahrain Island,
Persian Gulf.
(Mrs.) V. FENWICK,
Hon. Secretary

DAPHNIA CHAMPIONED

SIR.—As he, himself, puts it, Mr. C. E. C. Cole, in his letter in your August issue, has certainly been quick to spring in defence of *Daphnia*, which I have allegedly maligned. The paragraph in my article, to which he refers, does not, in fact, state that *Daphnia* are actually carriers of Gill Worms or any other pests. I did not even suspect them. Usually, many other forms of life inhabit the pond water from which *Daphnia* are taken. To me these were, and still are, suspect.

I am not sufficiently well scientifically equipped to argue whether my fish suffer from *Gyrodactylus* or *Dactylogyrus*, which are words that I cannot pronounce. Even if I could, I am afraid most of my fishkeeping friends would wonder what I was talking about. They have a much better idea when I use the common descriptions employed locally, namely gill worms and flukes.

My hobby is that of keeping Bristol-type Shubunkins, to which fish I always feed large quantities of live *Daphnia*. Mr. Cole may return whence he sprang, content in the knowledge that I, too, in my humble way, am a champion of *Daphnia* as a valuable fish food.

Bideford,
Devon.
W. J. BURNS

BREAKING NEW GROUND

SIR.—Some time ago, it occurred to me that not enough was done by aquarists, or the society which took the name of the district in which it operates, to publicise the hobby outside normal fishkeeping circles. To test out my theory, I let it be known to a number of local organisations, including the Rotary, Round Table, Church Guilds, etc., that I was prepared to give a talk entitled "Poor Fish."

As you know, experienced speakers are always in great demand. Often, to fetch them in from outside is costly, even when expenses only are paid. Most of the organisations approached were already aware of that fact and, immediately, I

received a number of bookings. After carrying out my promise to give the talks, I find that I have been able to reach people who normally think only in terms of a fish kept in a small glass bowl.

I also find that I get pointed and intelligent questions from these people who are outside our hobby. This gives me the clue that here we have a big field from which to recruit new aquarists. It is my intention to go ahead with this campaign until the members of every organisation in the area know how to look after fishes and realise the fun they can bring into the home.

It is possible that others are doing similar pioneer work to mine but I put the idea forward as it might encourage fishkeepers to take like steps in their own districts and, in doing so, interest many more people in the hobby.

Surbiton,
Surrey.
J. E. EDWARDS

ROLE REVERSED

SIR.—Perhaps the following extract from a recent issue of the American technical journal "Waste Engineering," may prove of interest to your readers.

"When fish in a pond near Philadelphia began to die because of oxygen depletion, firemen aerated the three-acre body of water by pumping from the pond and spraying the water back in the form of man-made rain. Someone donated cakes of ice to cool down the stagnant water. The firemen worked through the night in their mission of mercy."

"Pretty versatile fellows these firemen. They snuff out fires by blanketing out oxygen; then they save fish by providing oxygen."

Oxford.
V. H. LEWIS

CURED BY OVERFEEDING

SIR.—Observations on a Goldfish spawning in my pond are, I think, worth recording. The parents were typical pond Goldfish. From the spawning, nearly two hundred fish were reared. A few soon showed signs of developing into good Veiltails. A large percentage were Shubunkins.

During the second week, I noticed some of the fry to be swimming with difficulty. At first glance, it could have been thought that the cause was swim bladder trouble. On closer observation, I saw that it was the presence of very small air bubbles which were affecting them.

The young fish seemed to be taking these small bubbles with their food, eventually passing them out of the body with their excreta. To remedy the trouble, I removed the young fish from the sun and overfed them for a week with freshly-hatched Brine Shrimps. This overfeeding seemed to force out the excessive air and soon all the fry were swimming normally.

Breeding coldwater fishes is always of greater interest to me than breeding tropicals for two reasons. One is that they take longer to rear, itself a fascinating procedure, and, secondly, interest is always sustained through having to wait to find out the colours they eventually attain.

One of my hopes is to breed some Peacock-eyed Bass. In passing, it may be interesting to record that on one occasion I had the luck to breed Angel Fish successfully, using another adult Angel as a foster mother.

Spondon,
Nr. Derby.
F. D. L. HOCKEY

PROBLEMS ANSWERED

Queries are answered free of charge by experts. They should be sent to "Water Life," Urset House, Stamford Street, London, S.E.1., with a stamped, addressed envelope for the reply. All queries are answered direct but a selection is published below.

Keeping Earthworms

Can you tell me how to keep red garden worms alive? I have only a few young Veiltails and when I get a supply of worms I have to keep some of them for several weeks. The first batch I obtained I placed in a large tin with fine earth, which I kept fairly damp. I punched several holes in the tin for drainage but quite a number of the worms died.—(J.C., Leicester).

Earthworms are difficult to propagate but can be kept alive in a large metal container on the lines you are adopting. They will require a mulch of rotted green leaves which will hold the necessary moisture and without which they cannot feed. Let some cabbage and lettuce leaves rot into a wet, sticky mess, then place it in the centre of the earth and cover with a pane of glass which will retain the moisture. Do not disturb the earth or mulch when removing the worms. Keep in a cool, dark corner.

Daphnia Worth the Risk

I have heard that it is dangerous to feed Daphnia to tropicals and that Tubifex worms are difficult for the fish to digest. I have used both regularly without trouble. What are your views?—(D.M.W., Sutton, Surrey).

The main reason that some people say that it is dangerous to feed Daphnia to fishes is that there is a risk of introduction

of parasites and fish enemies with the food. We do not feel that the danger is nearly so great as is made out, when the following facts are noted. (1) That most fish parasites can only live in water that contains fish and the majority of Daphnia ponds are devoid of fishes. (2) If the source is a known one, the fish enemies introduced will be very small in number and are easily located either before or immediately after the Daphnia are fed to the fishes. Therefore, we think the advantages of Daphnia far outweigh any theoretical disadvantages and believe this view is held by the majority of experienced aquarists. With regard to Tubifex, we have not previously heard the argument that they are difficult to digest but the important point to remember when feeding Tubifex is that the worms must



PAIR OF PARADISE FISH

A colourful and interesting exotic species which is well able to stand temperatures in the fifties. The male Macropodus opercularis, with more developed fins, is to the right in this photograph taken by G. J. M. Timmerman.

have been cleaned by keeping under fresh, running water for at least 24 hours. Great care must be taken to avoid feeding any dead and decaying worms. Other extremely valuable live foods are chopped Earthworms, White Worms, mosquito larvae, Glassworms and Bloodworms.

Paradise Fish

I should like to keep some Paradise Fish (Macropodus opercularis) in an unheated 24 x 15 x 12 in. aquarium during the Summer months, using a heater in the Winter to keep the temperature at 55 or 60 deg. F. Would this be possible and would Vallisneria and Elodea be suitable for planting? I should illuminate the tank with a 100-watt bulb for about 12 hours daily.—(F.G., Oldham, Lancs.)

Your choice of Paradise Fish to keep in an indoor tank is ideal and a community of these fish will live quite well together provided the tank is well planted. The plants we would advise are Sagittaria or Vallisneria and Hygrophila, with some floating cover such as Water Fern or Duckweed. These fish will be quite happy at the temperature of 50-60 deg. F. but for breeding the temperature should be raised to about 70 deg., when the male will build his nest and coax the female under it. She will then discharge her eggs. The

WATER ANALYSIS

Samples should be sent (NOT delivered by hand) in a clean pint bottle, well packed, to Water Life Analyst, 12, Featherbed Lane, Addington, Surrey, together with a fee of 5s. per sample. Name and address of the sender and details of prevailing conditions should accompany each sample sent. Post-mortem examinations of fishes cannot be undertaken and corpses must not be sent to our Analyst with samples of water.

Sample received from Mrs. E. G., Stock, Essex. Taken from a circular pond, 10 ft. in diameter, two feet deep in the centre and with a one foot shelf around the edge. It was built three years ago and the bottom was covered with a few inches of garden soil over which stones were placed. At the time the sample was sent a Water-lily was growing and two Bog-beans (Menyanthes trifoliata) but no other plants thrived and the water was thick and green. There were three Golden Orfe and four Golden Rudd in the pond. Whenever the pond was cleared it was refilled with tap water but three or four days afterwards the conditions appeared just as bad. However, the pond had not been cleaned out for over a year prior to sending the water.

Test for impurities:—Appearance: turbid, heavy algal growth present. Odour:

offensive, sulphuretted hydrogen present. Total mineral content: 0.0240 per cent. Organic matter: 0.0100 per cent, extremely high, pollution indicated. Nitrogen compounds: 0.000120 per cent, serious pollution indicated. Ammonium compounds: 0.000085 per cent, serious pollution indicated. Poisonous metals: none detected. pH: 7.0. Chlorine, as salt: 0.002 per cent.

Suggested corrections:—The results of this analysis of a sample of pond water show that it is grossly polluted by both decaying animal and vegetable matter. The presence of sulphuretted hydrogen gas (an extremely offensive product of secondary decomposition) is quite fatal to all plant and fish life. This pond must be drained and completely emptied of its soil content; the bottom and sides must be thoroughly scrubbed with water containing a little "bleach" solution (one tablespoonful to one gallon of water). Partially fill the pond with tap water and again drain off, and allow the pond to "weather" for at least a week. Introduce a layer of pebble chalk and refill with tap water. It will be found that most aquatic plants will root in the chalk layer quite successfully. To stop excessive algal growth endeavour to provide shading to stop the rays of the sun from reaching the pond in late afternoon.

female must be removed as soon as the eggs have been laid and the male about seven days after the fry are free-swimming. We wish you success with this very interesting fish.

Planting a Tropical Tank

I am setting up a 36 in. x 12 in. x 15 in. tropical tank and would like to know how many plants and what wattage heater will be needed as the room in which it is situated has a fluctuating temperature. The principal occupants will be Angel Fish.—(A.Z., Bognor Regis, Sussex.)

We would suggest the following plants to start your tank. Three dozen Vallisneria spiralis or Sagittaria natans, one Amazon Sword Plant, three Cryptocoryne cordata or willisii. The Amazon Sword Plant will make a very pleasing centrepiece in the tank and will quickly grow to a large specimen. The Vallisneria or Sagittaria can be planted at the back and sides whilst the Cryptocorynes will break the colour if planted slightly forward in the tank. When first planted the tank will look rather sparse but very quickly these plants will increase in number and you will find that pruning is necessary. We have chosen straight-leaved plants in the main as these tend to show Angel Fish to the best advantage. If your tank is to be subjected to very fluctuating temperatures we advise a 150-watt heater and a thermostat.

if he has come once and has seen unlabelled tanks and has bought a catalogue which has told him little, he will think twice before coming again. The public is not interested in seeing rows of similar fish that are competing for such-and-such a trophy, nor are non-aquarists concerned with the fact that the Goldfish in Class 1 which won at a national event a week or two back is now unplaced. No, the public want to be entertained and unless there are new ideas in the way we present our shows, the support we get at the turnstiles or table at the door is likely to grow less.

It is not only lack of showmanship that we must watch, assuming that we want our shows to be money-spinners. We must and ought to look at the situation broadly. Is not one of the prime causes of the smaller interest in shows, both from the visitors' and the exhibitors' points of view, the fact that too many are held? I am not talking of the table shows and other small events confined to members of one club to which the public aren't invited, but of those shows into which so much time and effort is put by society officials. Sometimes they get the wholehearted support of their members. At others, they are a small band of enthusiasts who are left to do all the donkey work. They spend

concerned but, looking at the position more generally, I wonder whether we would not do better to hold fewer shows? If societies reasonably near to one another came to a gentleman's agreement to hold a combined show at a different place each year, such events should attract a bigger entry and could be on a scale that would justify hiring a large hall and putting them on in a manner likely to make people want to pay a visit.

There is that tendency already. The Birmingham event is run by one society, but gets the support of other Midland Association clubs; Bristol A.S. still runs a very successful event, but may well appreciate having the co-operation of other clubs in the South-western Association. The British Aquarists' Festival is only a big show because all Northern Federation clubs can participate. The Three-Towns fixture works out well.

I think it time that clubs got together to consider the situation carefully. Cannot the Federation of British Aquatic Societies give a lead here? Why not have area or county shows? Too many exhibitions are becoming financial liabilities. They are, at best, relatively expensive activities to put on, and if presented badly do more harm to the hobby than good. It would,



Mr. C. Walker, York, and his sister, leave London for a free holiday in Denmark awarded by Hykro Products in a recent essay competition. On the left is Mr. K. G. Hayes, U.K. importer for Hykro, wishing them bon voyage.

weeks preparing for the one, two- or three-day exhibition; they commit the club, with its full approval, to considerable expenditure and then find that they only just scrape through or, worse still, lose money because the attendance is small.

Where lack of support is due to poor publicity or a badly-staged show, then the immediate solution lies with the society

I suggest, be better to have twenty well-run open shows a year, put on by committees representing all clubs in the district, than attempt to stage two hundred mediocre events.

WHETHER or not the number of shows is too great, neither my colleague, Mr. Ashdown, nor I have been able to keep away from them. He spent some considerable time at Hendon's big event, at the Enterprise A.S. show at Friern Barnet, and went for the day to Nottingham.

Among the events I was able to attend were those of Willesden A.C., the interclub show of the Association of South London Aquarist Societies, that staged by Bethnal Green A.C. and, of course, the annual exhibition of the Midland P. and A.S., at Birmingham.

Presenting the prizes at Bethnal Green, I said, without exaggeration, that the standard was high. Certainly, the breeders' classes were well supported and the furnished aquaria looked most attractive. In addition, there was keen competition in the challenge class for Fighters, won this year by one of Mr. H. G. Rundle's Reds. What a character he is! He enters fish North, South, East and West, and what's more, not only wins at most of the shows he supports, but attends them in person.

WATER LIFE SHOW

JANUARY 12, 13 and 14, 1956

THE National Hall at Olympia has again been booked for the National Exhibition of Cage Birds and Aquaria. Sponsored by *Cage Birds* and *WATER LIFE*, this exhibition, which is the largest of its kind, will embrace new features that will attract another record attendance.

This year, the show broke all records. In the bird classes the entry was over 9,000 and already the organisers are preparing to cope with an even larger number next January. Similarly, the aquaria section covered a much larger area than before, and embraced a number of interesting features. *WATER LIFE* and the aquaria section committee have met to make provisional arrangements for an equally fine display in 1956.

WATER LIFE Show draws the best in furnished aquaria entries and we confidently look forward to good support for these classes in which both clubs and individuals will be catered for and for which first-class facilities will again be offered in the way of aquaria ready for use; efficient lighting and heating arrangements; and adequate supplies of hot and cold water.

The extensive gallery is again being made available for our section and we are looking forward to staging some intriguing displays.

Cash prizes will be offered, plus Awards of Merit and *WATER LIFE* Diplomas. Judges from the Federation of British Aquatic Societies are again being invited to place the awards and that organisation, plus the Goldfish Society of Great Britain, the Federation of Guppy Breeders' Societies and the London Branch of the British Herpetological Society, are giving their support.

WATER LIFE Show is a self-contained section of a unique display of colourful livestock. It offers excellent conditions for aquarists to show their fish and to set up furnished aquaria. It also provides for them and their friends an unequalled opportunity to see the best of the country's thousands of cage birds.

If you are an exhibitor, do not lose this opportunity to enter this show. If you are interested in fish and birds do not miss this chance to see for three days only the best exhibits of their kind that are in the country.

Full details of the competitive classes are being sent out to all clubs and known exhibitors shortly. Meanwhile, make a visit to the show a "must." Note in your diary the dates (January 12, 13, 14, 1956), the place (National Hall, Olympia, London, W.14), the opening times (Thursday 2.30-9 p.m., Friday, 10 a.m. to 9 p.m., and Saturday, 10 a.m. to 8 p.m.). You can get to Olympia easily. Now is the time for clubs to think about organising parties.

Star Falls for Fish

(Continued from page 241.)

Among other interests crammed into the all-too-few hours of relaxation is photography and for this pursuit Mr. Secombe has an artistic flair. But, when rest is called for, we like to imagine him sitting beside his aquarium idly watching the movements of his fish. Yet on visiting him, we found that, in a manner common to all aquarists, his enthusiasm soon outdid his fatigue. Bounding from a chair he pressed his cheery face close to the front glass and said in the lilting high-pitched voice which has made him famous, "That's a good one," then added, questioning and hopefully, "isn't it?" We were able to assure him that his indeed was a fine collection of fish and one of which he could feel justifiably proud.

1955 Hanover Guppy Show Austria the New Champions

IT has happened at last! The British Guppies have returned from Hanover with only 11 award points to show from 9 entries, and the Austrians are the new Guppy breeding ace—under German rules, at least.

The main honours of this second Hanover Show went to the Austrians for the simple reason that body size, colour, and colour pattern of their fish is unsurpassed—and that includes the United States' entries of Hahnel. One may only assume that familiarity with the Austrian types breeds contempt, for these fishes are infinitely more beautiful than the American and yet the judges passed them by, to give Paul Hahnel best fish in show award for the second successive year.

There was some surprise in London when the results were learned, since "support" entries gathered together at the last minute had, in at least one instance, beaten the entries that were expected to gain awards.

England's Two Premier Awards

England, represented by the Guppy Federation's London group, could secure only two first awards, these going to Mr. W. Howe (Topwords) and Mr. A. P. Stanley (Speartails).

The summary of results is incomplete since the awards in the Lyretail Class have not been received in London; it is reported, however, that Herr Tuschke won 1st award for Germany in this class. The following awards are confirmed: Best fish in show, P. Hahnel (U.S.A.). VENT-TAILS: P. Hahnel (U.S.A.); 2, Schmidt (Germany); 3, Frank (Germany). DOUBLEWORDS: 1, Klobitrofer (Austria); 2, Stiff (Austria); 3, W. Howe (England). TOPWORDS: 1, W. Howe (England); 2, Jaekel (Germany). LOWERWORDS: 1, Schonwetter (Austria); 2, H. S. White (England); 3, Stiff (Austria). SPEARTAILS: 1, A. P. Stanley (England); 2, T. Cross (England).

The judges considered that the Hahnel Guppies outclassed their German rivals to such a degree that the points ratings were 96—78.3—78. This will probably make the Guppy breeders of England sit up and take notice, but they may rest

assured there is little cause for alarm and despondency in this direction for, although the Hahnel Guppies are, without doubt, larger than any exhibited in England, they are not outstanding in other directions.

Colour, for instance, is not a high scoring point, although the body colour is pleasant without being striking. Fanning colour is again pleasant, but not nearly so brilliant as we have been accustomed to seeing from the leading British Veiltail Guppy specialists.

Fanning shape is a matter of American ideas as against the set show standards of the British. One cannot truly consider this aspect without a bias in one or other direction. The dorsals are larger than anything seen before, fanlike and pretty, yet lacking shape from the British viewpoint. The caudal is better shaped and nearer standard than was assumed here previously.

It is quite evident that to win in Europe the F.G.B.S. must revise its policy slightly. The demand for colour and beauty is very widespread both in the U.S.A. and on the Continent. There is quite a considerable opinion on the matter in this country and it is only when the British Guppies can be improved in both size and colour (including colour pattern) that we shall again see England carrying the awards in Hanover. Perfect finnage cannot score all the points, and, to many, finnage is now a lesser factor than colour. It therefore follows that the British breeders must follow up the work they started nine months ago, when the first Austrian Guppies were paired to top-grade British fish.

For the organisers, Mr. Ottomar Witt acted in Hanover, and Mr. A. P. Stanley managed the F.G.B.S. entries from London.

The England team was: Messrs. T. Cross (West London G.B.S.), W. Howe (S. London G.B.S.), D. Johnson (E.C.G.B.S.), H. Pearson (S.L.G.B.S.), P. Redbull (Spelthorne G.B.S.), A. P. Stanley (W.L.G.B.S.), and H. S. White (E.C.G.B.S.).

Five of the 1st award winners were scheduled to compete in the F.G.B.S. London Zoo Exhibition late in September. These included fish from Messrs. P. Hahnel (U.S.A.), Schonwetter (Austria) and Tuschke (Germany).

As a preliminary to this event, the West London G.B.S. held an All-Star International Class in which the aforementioned participated. —A.P.S.

F.B.A.S. Show Guides Second Set Now Available

WHATEVER criticisms may be levelled against the F.B.A.S. over its policy on show standards, it will readily be admitted that its Judges' and Standards Committee has done tangible and useful work in supplementing its "Show Standards for Cultivated Fishes" booklet (published in 1947) by "Show Fish Guides."

With effect from the beginning of September there have been on sale sixteen further sheets covering species within the Families Characidae and Cyprinidae belonging to the Order Ostariophysi and the Family Anabantidae within the Order Perciformes. They are pierced ready to be added to the F.B.A.S. loose-leaf folder.

The species covered in the second set are: Characidae—(1) *Gymnocorymbus ternetzi* (Boulenger). Commonly known as the Black Widow but described in the guide as the Widow Fish. (2) *Hemigrammus erythrozonus* Durbin. Commonly known as the Glowlight Tetra or Glowlight but given the slight variation in the guide of Glowlight Fish. The guide confirms the note in Brymer's "Guide to Tropical Fishkeeping," that to identify this species with *Hyphessobrycon gracilis* is incorrect. (3) *Hemigrammus ocellifer* (Steindachner). Commonly called the Beacon Fish. (4) *Hyphessobrycon ens* Durbin, commonly

known as the Dawn Tetra and referred to in the guide as the Dawn Fish. (5) *Hyphessobrycon innesi* Myers. Commonly known as the Neon Tetra but described in the guide as the Neon Fish. (6) *Hyphessobrycon rosaceus* Durbin. Commonly known as the Rosy Tetra or Black Flag Tetra, the guide employing the former description. A note is made to the effect that *H. ornatus* is a closely similar if not identical fish. (7) *Hyphessobrycon serpa* Durbin. Commonly known as Serpa but described in the guide as the Serpa Fish. Reference is made to two sub-species, i.e. *H. serpa serpa* and *H. serpa minor*. According to Brymer ("Guide to Tropical Fishkeeping"): "A fish with a more pronounced red colouring has been imported and, for some time, it was called *Hyphessobrycon minor* but Dr. Werner Ladiges, the eminent Continental ichthyologist, is of the opinion that the more reddish fish, which in other respects resembles *H. serpa*, is nothing more than a colour variety of this species. Dr. Ladiges, who has caught a single specimen of the true *H. minor* Durbin in British Guiana, says that it is a quite distinct species. He believes it to be very rare."

Cyprinidae—(1) *Rasbora heteromorpha* Duncker. Commonly called the Harlequin Fish. (2) *Rasbora maculata* Duncker. Commonly called the Spotted Rasbora. The guide points out that this was originally identified incorrectly as *R. kullochroma* Bleeker, a different species.

Anabantidae—(1) *Trichogaster leeri* (Bleeker). Commonly known as the Pearl or Mosaic Gourami, the guide employing the latter description only. (2) *Trichogaster pectoralis* (Regan). Commonly known as the Snakeskin Gourami. (3) *Trichogaster trichopterus* (Pallas). Commonly known as the Three-spot Gourami.

This second set includes a general introduction to the guides which, it is intended, shall be added to from time to time until most, if not all, species known to aquarists are included; general notes on the Genus *Trichogaster* and a revised classification of plants for aquarium shows.

Lebistes Study Group's New Policy

MR. J. E. EDWARDS, secretary and organiser of the Lebistes Study Group, is proposing to broaden the scope of the body by inviting a further number of practising aquarists to join so that theories on various aspects of fishkeeping can be tested. As previously, membership will be by written invitation only, but any aquarist invited will have the opportunity of putting forward the name of another fishkeeper with whom he wishes to carry out experiments.

An all-in subscription of 10s. per annum is proposed. Numerous regular meetings will not be held, especially as members are likely to be spread over a wide area. In the first year a gathering will be organised in London, so that members can meet and a chairman and treasurer may be appointed.

The Group has never included fishkeepers who are purely "cup-hunters" and it will continue to invite only those aquarists who have genuine interest and knowledge and are prepared to pursue research projects. There will be no compulsion in this direction and all experiments will be carried out on a purely voluntary basis.

Among experiments already conducted in Mr. Edwards' own low-voltage lighting system (WATER LIFE, June/July, 1954, and June/July, 1955, issues), which has been adopted by many other members, and on which regular reports are submitted. A low-voltage aquarium heating system is being examined and also a new type of fish food.

Whilst a number of the members are national names in the hobby, others are comparatively unknown, but all are particularly active fishkeepers. There are few rules and regulations and the idea is to gather around the Group individuals who are prepared to devote their time to real fishkeeping interests rather than to become immersed in club organisation.

London Lecture

AQUARISTS and herpetologists in the London area will have the opportunity of hearing Dr. F. N. Ghadially give a lecture on Saturday, November 19, in the Horniman Museum and Library, London Road, Forest Hill, S.E.23. Two of Dr. Ghadially's films will be shown, one, in colour, entitled "Fish, Amphibians and Reptiles," and the other, in black and white, called "Breeding the Brown Acara." This latter film won a three-star award at the "Amateur Cine World" 1954 contest. Admission to the lecture is free. It commences at 3.30 p.m.

Guppy Federation

THE new Federation of Guppy Breeders' Societies' badges are now available and can be obtained from Mr. A. J. Holloway, 37, Garfield Road, Plaistow, E.13 (price 3/- plus 2/-d. stamp for postage). Mr. Alec H. Charles' design for the badge was accepted at the May Assembly.

The Federation's annual show was held at London Zoo on September 24-25.

Midland Area Journal

FIRST issue of a journal produced by the Midland Association of Aquarists' Societies has been published. It is well produced, containing itself mainly to area news with a small percentage of general fishkeeping articles. Included in this initial number are details of the Association's officials, M.A.A.S. news, a list giving full details of affiliated clubs and news items received from them. The policy adopted seems just about right and the journal can form a useful link among the member-clubs it is intended to serve.

Los Angeles Convention

FIRST annual convention of the Aquarium Foundation of Southern California, is being held in Los Angeles on October 23. Three of the lectures to be given are titled "The International Aspect of the Hobby," "The Marine Aquarium" and "Why Tropical Fish?" all of which will be illustrated by colour slides.

ON October 11 Chelsea A.S. entertain the Streatham society for the semi-final of the A.S.L.A.S. knock-out competition.

N.A.S. Programme

HIGHLIGHTS of the National Aquarists' Society's programme in August and September were a lecture on "Guppies" by Mr. R. J. Affleck, M.Sc., in which he discussed their history, genetics, care and the production of Albino, a talk by Mr. P. Hewitt on "Fish Diseases," and a visit to South Coast Aquatic Nurseries, Parkstone, Dorset, on September 25.

Show Review

Hendon's Modern Approach to Show Promotion

THE HENDON A.S. staged its August 10-13 show in contemporary style. Under a marquee as part of the Hendon Borough Show, the society set out to make a new approach to aquatic show presentation, and succeeded. All aquaria were behind fascias and arranged in banks set in interesting lines. The walls of the tent had large fish photographs and their descriptions displayed on trellis. Responsible for the design was Mr. David Frost with Mr. Roy Skipper, as show manager, the guiding light behind the actual setting up. Mr. Skipper and his father also took the fish photographs. Features to provide interest for the general public were a display of reptiles, a remarkably comprehensive section showing pond life and a marine exhibit of coral and sponges sent by a Hendon member residing in New Zealand. Messrs. Johnsons of Hendon provided an autoscope which enabled colour photographs of set-up tanks, members' fishhouses, and scenes from other shows to be displayed periodically.

All aquaria containing prizewinners in the six competitive classes were fitted with modern style picture frames to set them off. The leading tanks in the club tropical furnished class were particularly attractive. Stoke Newington's first prizewinner had bold *Cabomba* to balance Westmorland stone and was stocked with Schuberti and Tiger Barbs. Second was W. Middlesex. A new society, Independent A.S., took premier honours in the club coldwater class where the plants in the tank emphasised its height. Two good Common Goldfish were the occupants. W. Middlesex were second in this class also. Mr. A. Baldock put on an extremely fine entry in the individual tropical furnished class and gained a first. He gave full emphasis to his excellent plants. Mr. J. Robertshaw was second. Restrained use of plants giving a natural effect gained first prize for Mr. A. Sutton in the individual coldwater furnished aquaria. Mr. S. Wingrove was second with a tank of orthodox design.

Mr. S. Brown's Permablack Mollies with fine department and colour were first in the livebearer breeders and Mr. W. G. Phillips' Flagtail Guppies, second. Exhibits in the egg-layer breeders were of quality with Mr. E. G. Lynch's Neons first and Mrs. B. Robertshaw's *Aphyosemon biatatum*, second. Mr. F. T. Barry gained first and second places in the coldwater breeders' class.

Friern Barnet Show

FOLLOWING closely on the neighbouring Borough of Hendon's event was the Friern Barnet Twelfth Summer Show in Friary Park where ENTERPRISE A.S. again staged the aquaria section in a marquee. This is not one of the largest events in the aquarists' calendar, in fact this year the entry showed some reduction, but one can always rely on fish of really good quality being exhibited. A win at *Enterprise* is one to be prized—and 1955 was no exception. A special attraction on this occasion was the F.B.A.S. Trophy up for competition in livebearer breeders' teams, where Mr. F. West's *Xiphophorus (Platyplectus) variatus*, well coloured and good department, led. An exceptionally well grown Kissing Gourami of large size headed the A.O.S. Labyrinth for Mr. F. Tegmere and went on to become best tropical fish in show. Also well in the running for this latter honour was the Red Platy pair shown by Mr. C. D. Collings (strongly coloured but their bodies could have been a little deeper), the Black Swordtails of Mr. H. E. Kirkpatrick (fine fish and with the male showing an unusually lengthy caudal spike for this variety) and the Salmon Discus (*Epiplatysichthys longipinnis*) exhibited by Mr. F. West. We also liked the beautifully coloured Cherry which led the Barb class for Mrs. B. Robertshaw. Other first prizewinners in the tropical section were Mr. F. Tegmere (Fighters), Mrs. W. M. Meadows (Cichlids) and Mr. W. A. Bone (breeders' egg-layers). Mr. Bone's exhibit was a team of *Corydoras myersi*—perfect little fish.

Mr. A. B. Lester's Shubunkin not only led its class but was also adjudged best coldwater fish in show award. It was a specimen with a lovely spread of finnage which was carried

particularly well. We should hear more of it at future shows. A smallish Scaled Fantail of quality led the fancy Goldfish for Mr. W. L. Wilson.

Among the furnished aquaria Hendon A.S. won the club tropical class with a tank having entirely adequate and pleasing—yet comparatively sparse—planting. It was a perfect setting for the Neon Tetra shoal. Second and third here were Enfield and Tottenham. Willenden A.C. headed the club coldwater class with an exhibit which had massed diagonal planting and was stocked with Orfe. Second were Hendon A.S. and third, Tottenham. Judges were Messrs. A. Boarder, C. W. G. Creed and R. G. Mealand.

Among non-competitive exhibits were the Sunset, Albino, Rubra, Gold-lace, Green-lace and Flagtail Guppies of Mr. W. G. Phillips, some of the new *Aplocheilichthys myersi*, the F.B.A.S. "talking fish," a display of cacti and other succulents by Mr. P. V. Collings, a show of

STAGED IN CONTEMPORARY FASHION

A corner of the marquee in which Hendon A.S. set up its recent show. Bold use was made of fascias and large photographs with explanatory matter. The event formed a new and successful departure for a fish show in the way it was presented to the public.

Photograph [R. Skipper]



reptiles by Mr. B. M. Smith and a Pets' Zoo. The exhibition was in the experienced hands of Mrs. W. M. Meadows, who acted as show secretary.

TWO societies, the THAMESIDE A.S. and ROMFORD A.S., staged the aquaria section at the Dagenham Town Show on August 27-28. Entries showed a 25 per cent increase over last year and, despite inclement weather, a good attendance was recorded. Judges officiating were Messrs. C. W. G. Creed and R. G. Mealand. A WATER LIFE Diploma went to Mr. G. Carter, whose furnished aquarium had the best technique and design. A similar award was presented to Mr. W. Gawler for his Red Swordtail, judged best fish in show. The Dagenham Town Show Diploma for the best furnished aquarium was awarded to Mr. L. Land and the interclub furnished tank competition was won by Thameside A.S. Mr. E. Ahrens gained seven first prizes. Messrs. L. A. Land and W. Gawler three each, Mr. L. Land two and Messrs. E. Thompson, B. Ashman and G. Rudnell one each.

AT the annual show of the NUNEATON A.S. the WATER LIFE Diploma was won by Mr. H. Beasley who had the best exhibit among tropical furnished aquaria. Mr. C. E. Jenkins won the cup for the best fish in the show, gaining 88 points with a Seat. This was the second successive year that Mr. Jenkins has taken the premier award.

FOURTH annual show of ROCHDALE A.S. reported briefly in our last issue, was divided into twelve sections. Mr. A. Wardle headed the furnished aquaria in Section A. The judges thought that all the tanks would have received higher pointings under "permanency" if bubbles had been brushed off plants, rocks and glass. Not enough attention was paid to rock strata and some backgrounds were too densely planted along their entire length. Guppy Section winner was Mr. A. Wardle with a 77-point Doublesword. Mr. C. A. Blake led the A.O.S. Livebearer and

Barb sections with *X. variatus* (81½ points) and a Tiger Barb (80), respectively. *Prochilodus insignis*, with 79½ points, led the Characins for Mr. D. Ince and Mr. D. I. Cadman's Pearl Gourami (82 points) headed the Labyrinths. Mrs. I. M. Fletcher showed the best A.O.S. Tropical, an Archer Fish, which went on to be selected as best fish in show.

A large Moor, exhibited by Mr. N. Wilkinson, was the best coldwater fish (77 points). Mr. C. A. Blake made sure of winning the breeders' class section with two teams of tropicals both gaining 89 points. Mr. B. Whitworth's *Cryptocoryne cordata* were the finest plants with 90 points. Exhibitor staging the best vivarium was Mr. W. M. Scaife.

THE KIRKCALDY A.S. recently staged the first open aquaria show to be organised in Fife. It attracted over 80 entries. The judges, Messrs. G. Henderson, and M. Kerr, thought that the general standard of the exhibits was high. Mr. P. Low staged the best furnished aquarium and received a WATER LIFE Diploma in addition to the Taylor Plaque and special for best tropical furnished aquarium. The same exhibitor also showed the best fish in show.

The leading coldwater furnished aquarium was set up by Mr. D. H. Glenrothes, who also displayed the best pair of coldwater fish. Other special winners were Mr. A. J. Herd (best pair of livebearers), Mr. A. Blair (best pair of fish), Mr. F. Wilkinson (best coldwater fish) and Mr. E. Headley (best breeders' team). First prizewinners were Messrs. P. Low (four); D. Henderson (two); E. Headley (two); F. Wilkinson (one); A. J. Herd (one); A. Blair (one); H. Kerr (one); C. Beardmore (two); and A. J. Laughton (one).

TWELFTH in the series, the 1955 annual exhibition staged by the MIDLAND A. & P.S., at Birmingham, was well up to the standard of previous years for quality and variety. The only adverse trend was the falling off of entries in the tropical classes. In the well-supported coldwater section the awards were placed by two Nottingham judges, Messrs. W. Webley and M. Welch. The tropical classes were judged by Mrs. M. Hemming, Messrs. V. E. Whiting, H. G. Heath and W. V. Jones.

Local traders supported the event with attractive stands, including Stuart Erskine, who has shops in the Birmingham area, H. Morris and Sons Ltd., a Smethwick concern with branches in "Brum," Fanday Products of Fanday House, Birmingham and Shirley Aquatics Ltd. of Monkspath, Shirley. A range of tanks showing the evolution of the Common Goldfish formed an instructive non-competitive display and the Guppy section was made more prominent by the backing given it by the West Midlands group of the Federation of Guppy Breeders' Societies.

As was to be expected in this keen centre for Goldfish breeders, the coldwater classes contained some good fish, including promising youngsters in the breeders' teams. Mr. T. Roberts' Common Goldfish led Mr. F. Wood's reasonably well-shaped Comet. Among the single adult Shubunkins there was little to choose but the red ticket went to Mr. A. C. Norton's medium-sized specimen followed by a slightly less well-coloured fish shown by Mr. W. T. Pegg. The difficulty of getting ideal male and female specimens for

(Continued next page.)

show purposes was illustrated by the class for matched pairs of Shubunkins, one of the two being inferior in one respect or another. There was, however, little to fault in the leading pair owned by Mr. Graham-Keys. A large class for novice Shubunkins was won by Mr. S. E. Amos with a big, well-coloured specimen that took special prizes for best novice coldwater exhibit and best Shubunkin in show. Another good fish from the same exhibitor came second. Confined to members, a class for 3-in. limit Shubunkins attracted sixteen entries, the winning fish with plenty of colour well distributed and having very good finnage, which took a special as well as the first card, being owned by Mr. R. Oxenham. Second was Mr. E. A. Mason's equally attractive fish, beaten a little on finnage. The open class for 1955-bred Shus. was won by Mr. Oxenham and a similar class confined to members was headed by a neat specimen for colour and shape shown by Mr. F. R. Close. It was selected as the best current year Shu.

Only six adult Calico Veiltails were entered, the best belonging to Mr. C. D. Roe. The class for 1955 specimens of this variety attracted some nice fish, the lead being taken by Mr. C. D. Roe's exhibit, beating some equally promising but less well developed entries put in by Messrs. T. L. Dodge (2nd) and T. W. Pegg (3rd). One of the four Scaled (Metallic) Veiltails entered by Mr. R. B. Raven gained the premier award in its class, also taking special for best Veiltail in show. The runner-up was another Metallic exhibited by Mr. V. E. Capaldi. Some very nice young fish were seen in the novice class for Scaled and Calico Veils, the winning fish being Mr. F. R. Close's Calico followed by Mr. M. Raven's Metallic specimen. In the Fantail class, Mr. V. E. Capaldi took first and special best coldwater fish in show with an excellent red Scaled Fan. Second was Mr. T. L. Dodge's moderately-sized but velvety-black Moor. A mixed class, that for A.O.V. Coldwater fish, attracted one unplaced Sunfish among several varieties of Goldfish. At the top was a typical Bubble-eye from Mr. C. D. Roe's Shirley collection. A telescopic-eyed Veiltail owned by Mr. Capaldi was second. London type Shus. were unplaced. The junior coldwater class was won by Shelagh Raven's Metallic Veiltail. A strong class open to Orandas and Lionheads had three good quality Orandas in the cards, shown respectively by Messrs. Tony Roberts, E. A. Mason and R. B. Raven. In the class for Moors, that put down by Mr. T. L. Dodge was commendable for colour and size, the runner-up belonging to Mr. Z. Webb being of equal colour but perhaps a little inferior in shape.

Two breeders' classes brought out some evenly-matched teams, the first award among the Twintails going to Mr. E. A. Mason's Calico Veils. Close behind were Mr. Capaldi's Metallic Fantails, third were Mr. Roe's Calico Veils, and fourth, Mr. Dodge's Moors. It was one of the excellent young fish in Mr. Roe's team that captured the special award for the best Veiltail bred in 1955. In the teams of 1955 Singletails, Mr. Z. Webb won with six Shubunkins that should make up into some very good fish, closely followed by some more high quality Shus. entered by Mr. T. L. Dodge. Both furnished aquaria classes in the coldwater section had some well-stocked tanks, the individual class being won by Mr. G. Phillips with some Moors showing up in contrast with the light-coloured rockwork and carefully selected plants. The club class was disappointing so far as numbers go but the standard was good with the Birmingham Fish Fanciers' Club leading and gaining first and special as well as WATER LIFE Diploma.

There was an extensive classification for tropicals and it was a pity that these classes were not supported better numerically. Fortunately, there was variety and good quality. The class for *Barbus titteya*, etc. was led by two Cherry Barbs (*B. titteya*) shown by Mr. C. D. Roe, followed by *B. cuningii* entered by Mr. H. Webb. In the class for *B. tetrazona*, etc. an outstanding couple of *B. ticto* shown by Mr. C. E. Field not only came first but gained the special for best *Cyprinidae* in show. Another two of the same species, shown by Mr. J. Bennett, came second with good quality Tiger Barbs (*B. tetrazona*) belonging to Mr. L. Naylor, third. The class for A.O.S. *Barbus* was headed by *B. schuberti* (R. V. Noble). The novice *Barbus* class was won by Mr. C. E. Jenkins with two typical *B. ticto*, followed by some nice Cherry Barbs (*B. titteya*). The class for Brachydanos and White Clouds was won by two

W.C.M.M. shown in outstanding condition by Mr. S. Prior.

The Characins were a good section. The class for *Hyphessobrycon* species, etc. had good Rosy Tetras (*H. rosaceus*), owned by Mr. L. Naylor, in the lead, with Mr. Roe's Bloodfins (*Aphyocharax rubripinnis*), second. The *Hemigrammus*, etc. class was headed by two nice Beacon Fish (*H. ocellifer*) shown by Mr. R. V. Noble. Variety was the keynote of the A.O.S. Characin class, the winner being Mr. A. A. Beardsley with two nice *Neolebias ansorgii* which were awarded special best Characin entry. Runners-up were two *Anostomus anostomus* shown by Mr. H. Webb. In the novice Characin class Mr. J. H. Buttle came top with two Salmon Discus (*Epiplatys charax longipinnis*).

Three classes were staged for Anabantids. The first, for two male Fighting Fish (*B. splendens*) was led by Mr. J. W. Bradley's two brilliantly coloured Reds which were selected as the best Anabantid entry in the show. The second was for one male Anabantid (A.O.S.) in which the premier award went to Mr. D. Yates' Leeri Gourami (*Trichogaster leeri*), of good size and in tip-top condition. Second was Mr. A. A. Beardsley's Combtail (*Belontiella signata*). The novices did well, Mr. D. J. Hibberd's two Leeri Gouramis coming first and gaining the special for best novice tropical entry in show.

A separate class for Angels drew some good fish, the awards going to Messrs. W. Harvey (1st and 2nd) and F. N. Hollies (3rd). Two Dwarf Cichlids formed another class, the two *Pelmatochromis kribbensis* belonging to Mr. H. Webb coming first and winning the special for best tropical fish and best Cichlid, followed by two *Apistogramma agassizii* from Mr. C. D. Roe. In the mixed class for A.O.S. Cichlid Mr. D. Yates won with two Jack Dempseys (*Cichlasoma biocellatum*).

The livebearer classes were reasonably well-filled. In that for true pairs of Mollies, first was the entry of Mr. P. L. English, of good colour and well matched. In the Platy class, Reds shown by Mr. W. Harvey were first and also adjudged best *Pecilia* entry in show. The Swordtail class was won by Mr. B. Peters; his pair showed good black mottling, as did the second pair of Wiesbadens shown by Mr. Roe. The Guppy section consisted of one general class and, excluding the special breeders' class, three supported by the local specialist group. In the class for A.V. Males (two fish) Mr. G. M. Davis won with Doubleswords. The Guppy special (confined to members) went to the 3rd prize-winning entry by Mr. P. L. English. Scartails and Veiltails (two fish) were led by Veiltails shown by Messrs. H. Smith (1st and 3rd) and G. M. Davis (2nd), 4th place going to Mr. A. L. Judge's Scartail. Swordtails and Lvretails (two fish) were led by Mr. G. M. Davis with two Cofertails and the class for Coloured Females (two fish) by the entry of Mr. A. L. Judge. The novice Livebearer class was led by a true pair of good quality Albino Swords, shown by Mr. F. N. Hollies. The class for A.O.S. Tropical brought together nine different fish, headed by Mr. H. Webb's Red Puller, followed by Mr. H. J. Yates' *Aphyosemion caruleum*.

Three classes for breeders' teams of six fishes showed that some good fish are being produced. In the Egglayer Class some Penguin Fish led for Mr. L. Naylor with some well-grown *Epiplatys longipinnis* second for Mr. J. Bennett. The class for Livebearers was won by Mr. C. D. Roe's Red Swords and this win in conjunction with his other successes earned for him the championship cup for most points gained by a member. The Guppy breeders' class was won by Mr. A. M. Palmer, followed by Mr. A. L. Judge. Two tropical furnished aquaria classes were staged, that for individuals going to Mr. D. Handley with a not-overcrowded tank, designed to show up the Neons and Beacoms against the cleverly designed background of plants and rocks. Another attractive entry (this time in the interclub class) was that of Stourbridge A.S. which gained first prize and the special with WATER LIFE Diploma for best tropical furnished aquarium.

AN unusual innovation at the COLINDALE A.S. fourth interclub show on September 3 was a brains trust session with Messrs. F. H. Riddle (chairman of the F.B.A.S.), Mr. R. J. Affleck, M.Sc. (President of the Goldfish Society), Mr. D. Johnson (President of the Guppy Federation)

and Mr. W. Wilson (Goldfish Society) among those on the panel. Mrs. I. D. Smith showed the best fish of the 105 entries, which was a Double-sword Guppy. The Colindale society's team of entries was adjudged the best society's exhibit. Both Mrs. Smith and Colindale A.S. received WATER LIFE Diplomas.

APPROXIMATELY 400 fish were on show at the fourth annual show of PORTSMOUTH A.S. Judges were Messrs. C. J. Saunders, B.Sc., and C. W. G. Creed. Mrs. Allen's very fine *Aphyosemion sjostedti* won a WATER LIFE Diploma as the best fish in show and Mr. F. Lush's Common Goldfish was the best coldwater entry. A club member, Mr. Abel, constructed a stand in which he featured a collection of frogs, toads, snakes, lizards and other reptiles, many of which he had collected himself.

Trophy winners were:—Suregrow Cup (Best Swordtail), Mr. Norcross; Taylor Challenge Cup (interclub furnished aquaria), Portsmouth A.S.; Laurie Wilson Cup (individual tropical furnished aquaria), Mr. A. Stoodley; Eddie Knight Cup (individual coldwater furnished aquaria), Mr. F. Lush; Wm. Taylor & Son Trophy (best members' tropical fish), Mr. J. Stillwell; Henry Luff Trophy (best members' coldwater fish), Mr. F. Lush; Stoodley Challenge Cup (best Barb), Mr. J. Stillwell; Veiltail Trophy, Mr. J. Stanton; Nunn Senior Trophy (best Labyrinth), Mr. A. Blandford; Taylor Trophy (highest tropical points), Mr. A. Stoodley; Taylor Trophy (highest coldwater points), Mr. J. Stanton; Taylor Trophy (breeders' tropical), Mr. J. Stoodley; Taylor Trophy (breeders' coldwater), Mr. C. Whitehead; C. and A. Smith Trophy (best juvenile furnished aquarium), Miss J. Hill.

THE fourth Welsh aquarists' show, staged by the WELSH NATIONAL A.S., had a record 250 entries. The standard of the fish on view was higher than on previous occasions, although attendance was not quite up to expectations. The best fish in show and best tropical fish was shown by Mr. W. H. Webb, who also obtained the best aggregate of the Welsh National A.S. members. The leading coldwater fish was shown by Mr. H. V. Jenkins. Award for the best exhibit, shown by a junior Welsh National member, was shared by Stephen Jenkins and Graham Ropke. Best furnished aquarium was set up by Mr. R. Brotherton, best Guppy by Mr. R. S. Wigg and best inter-society furnished aquarium by Llantwit Major A.S. First prizewinners were: Mr. V. Capaldi (Goldfish and breeders' coldwater); Mr. H. V. Jenkins (Shubunkin and A.O.V. Goldfish); Mr. J. Amesbury (A.O.S. coldwater fish and male short-tail Guppy); Mr. R. S. Wigg (male long-tail Guppy, female Guppy and breeders' tropical); Mr. S. Rosser (Mollies); Mr. D. H. Sanders (Platies); Mr. Rochell (Male Swordtails); Mr. L. Biddle (Female Swordtails and Minnows); Mr. A. B. Williams (Siamese Fighters); Mr. W. H. Webb (A.O.S. Labyrinth Characins, Cichlids and A.O.S. tropical); Mr. and Mrs. Spurrier (male Barbs); Mr. S. Jenkins (female Barbs) and Mr. R. Brotherton (furnished aquaria).

OVER 260 entries were received for the 22-class, fourth annual show of LEYTON A.S. Judges were Messrs. J. Carnell, C. W. G. Creed and C. R. Looker. Mr. L. G. Coombs' Marble Cichlid was awarded the WATER LIFE Diploma and cup for best fish in show. Six societies took part in the club tropical furnished aquarium class, which was won by Herts and Essex A.S. Other first prizewinners were Bethnal Green A.S., in the club coldwater furnished, Mr. G. E. Tansley, in the individual tropical furnished; Mr. E. W. Bartlett, in breeders' tropical egg-layers and Swordtails; Mr. A. E. Crisp, in Barbs and Characins; Mr. L. G. Coombs, in Cichlids; Mr. G. E. Tansley, in A.O.S. tropical egg-layers and members' breeders' livebearers; Mr. J. E. B. Brand, in Labyrinths; Mr. O. Foulsham, in the two Guppy classes; Mr. W. Walker, in Platies; Mr. H. Summer, in Mollies; Mr. H. Tisbury, in classes for Orandas and Lionheads and Veiltails and Moors; Mr. R. Harvey, in Shubunkins; Mr. E. Croft, in Common Goldfish and Mr. R. S. Bergdahl in tropical plants.

Pressure on space has resulted in reports of Cambridge F.C., N. Staffs. A.S., Nottingham A.S., Wilsden A.C., Bethnal Green A.S., and A.S.L.A.S. events being held over until next issue.

News from the North-west

Lancashire's Fish Exhibitions

A Good Year for Native Plants—Palmated Newt Colonies—
Collecting Water Insects—Approach of Schools to Aquatic
Studies—Counteracting Television—Trader and Hobbyist

ONCE again, in the show season, we have seen the best fish exhibit ever put on at the July Liverpool Show. It was staged by Merseyside A.S., with commercial advertising posters far less obtrusive than in former years, and, alongside, the Liverpool and District Guppy Breeders' Society came in for the first time with a collection of 26 small tanks together with identity charts. Although still having a small membership, meeting on the second Wednesday of the month at the Common Hall in Hackins Hey, off Dale Street, the Guppy breeders are an enthusiastic group and their first exhibit did them great credit.

One of the noteworthy annual works' exhibitions of hobbies and crafts is that arranged each August by the English Electric Company's two factories at Gilmoss and Netherton, on the edge of Liverpool. A few years ago I was told of an attempt to form an aquarist society in the former factory's social activities, but there were not enough members to get it going. This time they planned a wild flower stand, but at the last minute the botanists let them down. The other factory, however, staged an exhibition by members of the Merseyside A.S. In contrast, Southport's great flower show, the largest of its kind in the world, again had no aquaria exhibits and only one of aquatic plants—that of Perry's Hardy Plant Farm.

In a very dry Summer, aquatic plant-hunters have done very well, as is so often the case. The Water-lilies were magnificent in a little Anglesey stream just above Rhosneiger (in association with *Butomus*, the pink Flowering Rush), at Redesmere and Capethorne Hall in east Cheshire and the long, narrow lake at Boleworth Castle, a haunt of big Tench, in south Cheshire. Sedges found along the River Clwyd, between Rhewl and Bont-uchel, near Ruthin in North Wales, included *Carex pendula*, *C. xylotica*, *C. hirta*, *C. flocca*, *C. panicea*. Even at Darcy Lever, near Bolton in industrial East Lancashire, a backwater of the River Croal was full of such plants as *Potamogeton pectinatus*, *P. zosterifolius*, and variety *littoralis* of the Water Plantain *Alisma plantago*.

The American yellow Monkey Musk, *Mimulus guttatus*, made a golden blaze of yellow visible a mile away from the length of stream it choked on the hillside above Dinmael School, near Corwen. It is also abundant in a stream above Llangwyn, near Llanrwst railway station, along the banks of the Lledr below Lledr Hall, by the Dee at Llangollen, and at Berwyn. It is spreading along many North Wales streams and growing also in Lancashire at Dean Wood stream, Upholland (Wigan) and at Astley Bridge, as well as in the Pennines at Upper Swaledale (Yorks.) etc. The same plant was also used in the winning rock-garden and other exhibits at Southport Flower Show.

The Bog-beetle (*Menyanthes*) was very fine on



Photograph [L. E. Day]
The Palmated Newt (*Triturus helveticus*).

the moorland bogs beside the footpath from Bettws-y-Cod nearby to Llyn Elsi, alongside the moss more in Cholmondeley Park (Cheshire) and at the fisherman's path across Massam's big slack on Freshfield dunes (Lancashire) etc.

From Preston comes the report of the discovery this Summer of a colony of Palmated Newts in a pool in the Ribbles Valley, with a request for further information about them. Most of us began our aquarist days long ago with the inmates of our local ponds and streams, and this was always the rarest of the three British native newts, although in parts of Wirral the Alpine Newt has been introduced to several ponds by a friend prominent in the Birkenhead Society. The Palmated Newt is found in Britain mostly in the west.

The late Phyllis Kew of Huddersfield once told me she had found it in a pond near Pwllheli in North Wales (it seems to be the dominant newt in most of Wales). It may also be found at Garstang in West Lancashire, by the Devil's Wall near Ormskirk, and at Walton (Warrington) in north Cheshire, as well as formerly at Upton-in-Wirral, although it does not seem to be there now. It is commoner in east Cheshire, like the Goyt valley, Romily, Marford, Dukinfield and Stalybridge, and has probably been often overlooked or confused with the Common Newt.

The web is only a fringe to the toes after breeding, and the claws when searching for the Palmated Newt are the ridges on its back, the thread-like tail filament and the rather squarish body. It is much more aquatic than the Common Newt.

All collectors of water-life in the North-west know the evils of pollution. Dr. L. Klein, chief chemist of the Mersey River Board (Warrington), which covers several Lancashire and Cheshire streams, will give an important public lecture on "River Pollution" under the auspices of the W.E.A. at the Gable Institute, St. Helens town-centre, on Saturday evening, February 18, 1956. The recent report of the River Board points out that the present situation will remain "until we can afford to spend a figure greatly exceeding the pre-war rate." The board has applied to the Government for confirmation of a by-law prohibiting the putting of litter or any other objectionable matter into streams.

Trapping Water Insects

I wonder how many aquarists interested in aquatic insects appreciate that the modern mercury vapour-lamp moth-traps, used by naturalists to catch moths at night, are also showing more clearly the nocturnal travels of aquatic insects? Canon G. A. K. Hervey, of the Penrith Natural History Society, has been very active this Summer with his M.V. trap. On one night alone at his rectory in Great Salkeld he caught 300 or more. Water Boatmen (probably the small species, *Sigara nigrolineatus*) in his trap, with another 80 or so found underneath it, as well as many water beetles, and the quaint little fly-like aquatic moth *Acentropus niveus*, whose caterpillar feeds on Pondweed (*Potamogeton pectinatus*) and whose flightless female with rudimentary wings swims under water. During August a large number of the rarer winged female *A. niveus* were taken there. The trap also caught 80 species of moths the same night—July 31—August 1. Large numbers of Caddis Flies were caught the previous month.

A school which encourages a biological approach to the aquarist's hobby is Bootham, the famous Quaker School for boys near York. Looking at their natural history society's mimeographed summer bulletins, which an old boy showed me recently, I see they had a busy time collecting water life during their week-end camp near the Fairfax Lakes, at Ampleforth. Bird-ringing tends to overshadow water-life studies in many of the field clubs run at modern boys' schools and, even where our subject is catered for, as at York, the tendency is towards the ecology of pond and lake inhabitants instead of the more interesting pleasures of keeping British and foreign fishes. The danger I find is that the boys are offered just another study (which so many drop with the rest when they leave school or University) instead of a lasting hobby. Bootham, at York, and the Holt School, in

By "Aquaticus"

Liverpool, were amongst the pioneers of school zoology in the old northern matriculation area. Dr. R. J. Daniel, the Liverpool University oceanographer, and Dr. J. H. Fraser of the Scottish fisheries, are products of the latter school.

Most aquarist societies have begun their winter programmes and are again feeling the effect of television upon audiences, particularly for lectures, films or entertainment. It is going to be a severe test for many but it is not peculiar to aquarist societies. Other clubs, literary societies, cinemas, musical circles etc., are all affected. The aquarists, however, have a strong advantage in that television cannot compete with their table-shows and competitive exhibitions.

I am often asked for suggestions to counteract the double competition of commercial and B.B.C. television. Societies vary greatly and,

Testimonials to Good Fishkeeping

THERE is always keen competition for WATER LIFE Diagonals, aptly described by one show secretary as "Testimonials to Good Fishkeeping," when they are offered at aquaria exhibitions. We shall be pleased to consider applications for two of these attractive diplomas from societies promoting open shows and for one from those staging annual members' shows. The conditions under which they are offered to competitors are left to the promoting society's committee. It would be appreciated if societies made their applications early so that there is good time for details to be included in their show schedules.

amongst the improvements they might consider, are increasing the social and discussion side which television cannot offer, whenever possible showing new and rare fishes, avoiding meetings clashing with a major television programme, although this is difficult if a syllabus has to be printed months ahead. Briefly then—never compete, but offer something different.

When television has a programme with an aquatic approach the small club can view it as a club and then discuss it as a club. A lot of the fear of television is exaggerated. It mainly takes the members who were never very much interested in the first place and, for the critical mind, the local society can often arrange a more interesting and fuller evening on our subject.

In the recent special aquarium issue of an American pet journal, a Manchester teacher, Mr. Raymond Yates, writing from the northern stronghold of the hobby where 25 clubs and nearly 200 dealers are to be found within 15 miles radius of his home town, gives the "low-down" on the difficulties of the English aquarium dealer. The trade does not influence the hobby in this country so much as in the U.S., but Mr. Yates paints a very gloomy picture of the tradesman's trials which would make a good discussion for any club this Winter. The fish-keeping public as a whole does not bother to understand their difficulties," Mr. Yates tells his readers, "makes few, if any, allowances, and thinks only of its own side of the counter."

I do not know if the writer has had any experience of selling things for a living, but when he goes on to state, "Most people look in at a dealer's shop for a good look around, many with no intention of buying," he overlooks that it is the first aim of any shopkeeper to get people inside, even if it is only to look around. It is up to his salesmanship to turn visitors into potential customers. By listening to sad tales of lost fish and giving experienced advice, he builds up the confidence of his customers which brings them back again. In any business, including selling Guppies and Goldfish, the customer is always right.

Exhibition in Prague

A COMPREHENSIVE catalogue of a 1955 aquarium and vivarium exhibition held in Prague has been received recently. It is some time since we have news of fishkeeping activities in Czechoslovakia, but from the details contained in this latest publication it seems that the variety of fish and plants on show was quite large.

New Fish and Plants on Show in Holland

IN conjunction with the Silver Jubilee Conference of the Netherlands Bond "Aqua-Terra" the aquarists' clubs of the Hague and district, known as the "Combinatie Groot den Haag", staged a decorative and educational show. The exhibition was held in a part of the "Hall of Knights" and the designer (Mr. G. J. van Nimwegen) is to be complimented on the thought that went into the planning. There were, in all, 66 aquaria, each one set up by a society or an individual member. They were arranged to make a decorative or breeding exhibit and, in addition, to show a geographical set-up of fishes and plants. Some were so designed to make a display of fishes, and others used plants as the prominent feature.

The aquaria were placed so that as one approached, not more than two large or three small aquaria could be seen at one time. This was so well worked out that as one entered and looked down the show only the first two tanks could be seen, but having admired these two, by turning half-left one faced more tanks, and then by another right turn more tanks were observed, and so one progressed through the hall.

In several places vivaria and paludariums were situated. The paludarium is a pool set in the midst of miniature hills and trees. The pools were stocked with very large Gouramis and

similar fishes and were attractive exhibits.

Of the aquaria, they all were well decorated with good fishes, plants and attractive arrangements, but a few could be mentioned individually. Firstly, the most outstanding tank housed a collection of *Phenacogrammus interruptus*, *Anostomus anostomus* and *Chilodus punctatus*, and, of these fishes, the *P. interruptus* were the most outstanding in the show, very large, with varied but soft coloration and very fine and well developed fins. Another outstanding exhibit was one of the marine aquaria, which was among the most colourful aquaria I have ever seen, with its collection of Coral Fishes and many-coloured anemones and corals. Another striking tank housed seven types of *Nannostomus*.

Numerous species were to be seen and some of the most striking were, *Pterolebias longipinnis*, *Rasbora steineri* and *vaterifloris*, *Hypselotris cyprinoides*, *Syngnatus specifer*, species of *Otocinclus* and *Brachyogobius*, *Aplodichthys myersi* (a new Congo fish rather small but very attractive against a dark background) and *Cyprinodon dearborni*.

In a large number of the aquaria, by the skilful use of bark, willow roots, rocks etc., sand was built up to various levels, to show plants of different heights. Plants were very good but, if there was an outstanding one on show, it was blended amongst other plants so that it was not obtrusive. The true *Cryptocoryne villata* (20 in. tall) and *C. longicauda* were shown in several tanks; also a new Lace Plant with rather long bright green leaves. C.W.G.C.

Club Secretaries Appointed

Edinburgh A.S.—Mr. J. M. Wilson, 1 Melgund Terrace, Edinburgh, 7.

Kidderminster A.S.—Mr. L. Lane, Schoolhouse, Abberley Road, Kidderminster, Worcs.

Croydon T.B.C.—Mr. G. F. Boyce, Pixham, 67 Nimrod Road, Streatham, London, S.W.16.

Smethwick A.S.—Mr. A. F. Slade, 118 Unett Street, Smethwick, 40, Staffs.

Glasgow Northern A.S.—Mr. W. White, 46 Eveline Street, Glasgow, E.1.

Redhill A.S.—Mr. W. S. Elliott, 6 Arbutus Road, Redhill, Surrey.

AN interesting programme of films was shown to members of **Cambridge F.C.** at their September 5 meeting.

MR. K. G. DOWNS informs us that **Dartford A.S.** has had to be disbanded due to lack of support.

ANNUAL show of the **Guppy Federation's East Midlands Section** will take place on October 15 at the Empire Hotel, Leicester. It will be followed by a dinner.

Club Notes and News

The Editor invites clubs to send brief reports of meetings and announcements of forthcoming events. News items for the next issue should reach this office no later than Friday, November 11.

MR. A. H. CHARLES is President of the **Northolt A.S.** The secretary is Mr. D. S. Ross, 78 Kingshill Avenue, Northolt, Middx.

COMPETITION for the best 1955-bred fish in the **Southern A.A. (Brighton)** will take place on December 12. Two members were successful at the recent Portsmouth open show; they were Messrs. L. H. Ede and J. Wilson.

FUTURE activities of **Aylesbury A.A.** include a talk by Mr. A. Boarder on "Cacti" (October 11) and a lecture on "Cold-water Fish" (November 9). The society staged its 1955 exhibition during July.

MR. L. BLAKE'S Common Goldfish was adjudged best coldwater entry at the **High Wycombe A.S.** September 3 exhibition. The *Scaphophagus argus* shown by Mr. L. Franklin was the best tropical. Both exhibitors received **WATER LIFE** diplomas.

FIFTH open show of **Oldham A.S.** was held at the end of August, when Mrs. J. Grise showed the best individual tropical furnished aquarium and Mr. A. Sloan the best members' furnished aquarium.

THE **Lichfield A.S.** staged its annual show from September 10-24.

AN entry of approximately 300 was expected for the **Dublin Society of Aquarists'** annual show held on September 24. A **WATER LIFE** diploma was awarded for best fish in show.

PRIZES won at the **Nottingham A.S.** show were presented at the society's September 28 meeting.

THE **Kettering A.S.** staged its third annual show at the end of August. F.B.A.S. judges, Mr. and Mrs. F. G. Wood, officiated and the opening ceremony was conducted by the Mayor of Kettering.

FOUNDERS' Cup and **WATER LIFE** diploma winner at the **Urmston A.S.** annual show was Mr. F. Braddock with the best furnished aquarium. Other special prize-winners were Mrs. I. Southern (first in the coldwater furnished aquaria class), Mrs. M. Matthews (first in the Guppy section) and Mr. J. Southern ("Gordon Prize" for a Cherry Barb).

THIRD annual show of **Peterborough A.S.** was a three-day event held during September. On September 30 Mr. R. O. B. List, F.B.A.S. general secretary, visited the club and spoke on "Tropical Fish."

OFFICERS elected at the well-attended A.G.M. of **Warrington A.S.** were President, Mr. J. Petley; chairman, Mr. E. W. Palmer; secretary, Mr. H. Moulds, 9 Myrtle Grove, Latchford, Warrington, Lancs. and treasurer, Mr. J. Boaler.

THE **North of Scotland A.S.** sixth annual exhibition was judged by Messrs. T. Beveridge and D. Kean. Best furnished aquarium was shown by Mr. L. Hyland, and best plant by Mr. C. Pirie. Each received a **WATER LIFE** diploma.

AT the annual general meeting and supper of **Smethwick A.S.** Master David Stokes was presented with the Harry Cope Shield for the most points for coldwater fishes gained over the year.

THERE will be open and members' classes staged at the annual show of **North Birmingham P. & A.S.** on October 19-24. Two **WATER LIFE** diplomas will be competed for.

ANNUAL show of the **Gloucester & Cheltenham A.S.** will be staged during October.

ON September 10 **Amersham Grove A.S.** put on a display of aquaria, livefoods, lizards, and pond life at a flower show held in Dulwich.

NEWLY-FORMED **Independent A.S.**, which operates in the North-west London area, had success in the first open show which it entered. The event selected was that of **Hendon A.S.** and a first prize was gained in the club coldwater furnished aquaria class. Secretary of **Independent A.S.** is Mr. L. W. Dare, 17 Lady Somerset Road, Kentish Town, N.W.5.

MR. J. O'BRYAN, Jnr., 12 Barrack Street, Londonderry, N. Ireland, is secretary of **Londonderry A.S.**

FIRST prizewinners at the third annual table show of **Willesden A.C.** were Messrs. Atkins and Bevins. Judging was undertaken by Mr. D. Cannon.

BEST fish in show at the exhibition put on by **Dunstable A.S.** as part of the Grove Gardens Old People's Fête, were Mr. P. Brown's Merry Widows (*Phallichthys amatus*).

TWENTY-FOUR entries were staged by members of **Guildford A.C.** at a recent table show judged by Mr. J. B. McInerney, who also delivered a lecture. A small display in the foyer of a local cinema proved successful.

ANNUAL members' show of **Bury A.S.** was staged on August 27 and Mr. A. Wardle received a **WATER LIFE** diploma for the best furnished aquarium in show.

THE **Exeter A. & P.S.** set up an exhibition on September 7-8 as part of the Exeter Flower Show.

MR. J. D. RUSSELL has resigned as secretary of the **Stirling A.S.** Mr. R. S. Hill, 8 Dunster Road, Causewayhead, Stirling, is filling the post until the end of this year.

TWO Continental aquarists, Mr. C. W. Pudney of Paris and Mr. P. Borst of Holland, visited the August 4 meeting of **Bexhill A.S.** Mr. Borst attended a further meeting on September 1 and spoke on "Tropical Fishkeeping in Holland." Mr. D. Jolliffe won the Home Aquaria Challenge Cup, donated by Mr. J. W. Willocks.

ITEMS on the programme of **Inverness A.S.** are the Highland Hobbies Exhibition in November and the club dinner in December.

World Federation of Aquarists

ON Saturday, August 13 at 10 a.m., a general meeting of the W.F.A. was held in The Hague. Very appropriately it coincided with The Hague Festival of Flowers and all members were presented with buttonholes of carnations. The meeting was held in the historic "Hall of Knights," a building dating from the thirteenth century in which the Queen of the Netherlands opens Parliament. This famous hall is part of the Binnenhof, which is the seat of the Government, who kindly allowed the W.F.A. to meet there.

The meeting was opened by the President, Mr. P. C. Tolk, who automatically took this office after the resignation of Dr. Lodewyckx from Presidency of the Netherlands Bond "Aqua-Terra."

There were many countries represented and the President welcomed all the Council and other members who were present.

The general secretary, Mr. Veldhuizen, reported that the Federation's magazine had reached its third issue, and that copy for this magazine was wanted from other countries. He stated that Dr. de Wit, the chief editor (who was, at the time, leading an expedition somewhere in Africa, in search of new aquatic plants, etc.), had resigned from that position.

Eighteen countries or states had applied for membership of the W.F.A. The new countries ranged from New Zealand, the U.S.A. and Canada to China, Pakistan and four on the African continent. At present the W.F.A. magazine was being exchanged with 15 countries.

Mr. Keller (Germany) expressed the thanks of the meeting to Mr. Veldhuizen and Dr. de Wit for paying all the initial expenses of the W.F.A. and also to the N.B.A.T. for their generous financial help.

It was agreed to carry on "The World Aquarist" and that publication should continue from the Netherlands. As regards a successor to Dr. de Wit, it was decided to ask him to carry on but, if he could not do so, then it was agreed that selection of another editor be left to the President and the general secretary. The President stated that if Dr. de Wit would not continue then he would carry on himself for the time being.

Election of the second world council was made and to the groups already represented on the Council were nominated California, Pennsylvania, the Aquarists' Internationale, Canada, New Zealand, Pakistan, India, Paris, Rhodesia.

Mr. Campkin notified that he did not wish to stand for the executive committee and it was agreed that Mr. C. W. G. Creed be elected to fill this vacancy. Dr. de Wit was appointed chairman of this committee.

Goldfish Society Resignation

TECHNICAL director of the Goldfish Society, Mr. Eric Weatherley, has resigned from his post. This action followed discussion at the society's A.G.M., reported in our last issue, on the question of recognising further Goldfish varieties. Types under review were the fairly recently imported Bubble-eye, Pompon, Celestial and Pearl Scale. Mr. Weatherley considered that if these varieties were recognised then intermediate forms such as the Fantail, would also require standards. At the meeting a number of members subscribed to the view that the four new importations had characteristics different from those contained in the Goldfish Society's basic varieties; they were not intermediate in the characters which they showed, but were distinct variations which required recognition.

Following the vote taken at the A.G.M., standards for the four new varieties will shortly be put before members for their approval or rejection.

Mr. Weatherley has been largely responsible for the pleasing displays put on by the society at WATER LIFE shows in recent years. In the words of Capt. L. C. Betts, the G.S.G.B. chairman, speaking on behalf of his society, "We can ill afford to lose his help and advice and friendship." It is to be hoped that, while no longer an office-bearer, Mr. Weatherley will continue as a member of the society to which he has devoted so much of his time and energy.

Pinewood Dors

HURRAH for herpetologists! That was our reaction one late June day when we heard that Pinewood Film Studios were shooting a film in which alligators took a leading part. We mention this first in justification for our visit, but correlated with our enthusiasm, to an extent we are not prepared to disclose, was the fact that Diana Dors and Jean Carson were also taking prominent roles. Briefly, it was one of those occasions where business and pleasure worked in happy unison.

The film is titled "An Alligator Named Daisy," a rumbustious frolic with James Robertson Justice roaring his way through as a millionaire tycoon, at first concerned about his daughter's interest in a young fellow who keeps a pet alligator, and then converted himself to the noble calling of herpetology. Not a person to do things by halves, he launches a nation-wide campaign to popularise alligator-keeping.

Culmination is an alligator rally where personalities—Gilbert Harding and Jack Payne among them—wheel in their pets for the judging.

It's love at first sight for two of the exhibits and rushing to meet each other they lead an alligator stampede into the lake. To add to the confusion, the bridge, from which Justice and his retinue are judging the contest, collapses and the company—Diana Dors included—get a ducking.

We descended on the Pinewood outdoor set just as Diana Dors was being carried from the drink by Donald Sinden, and during the whole afternoon the characters had to assume varying degrees of dampness. There are few situations more amusing than be-tailed, top-hatted Stanley Holloway being drenched by water can and garden syringe.

Possibly sympathising with the staff who had the job of effectively wetting him, James Robertson Justice—a massive man by all standards—sat fully clothed in a galvanised bath of smallish proportions. Jean Carson, a wisp of a girl, joined in the fun and sat herself in a similar bath into which J.R.'s outsize feet overflowed. Sensing the drying effect of arc lights another experienced actor filled his topper to the brim, inverting it over his head just prior to shooting. All this took place in the Rhododendron Garden of Pinewood's luxuriant grounds beside a lake where Green Tench lazily swam. We could not help speculating what their reaction would be on the morrow when the alligator stampede was staged. Sixteen lengthy



Donald Sinden and Jean Carson get acquainted with their co-star—an alligator named Daisy.

alligators descending into their home would be a surprise even for hardened film studio fish. However, the lake is large and the shot was to be short, so after an initial flurry of fins they would find quietude in some backwater known only to themselves.

Our guide and informer at Pinewood was Mr. Robert Jackson who supplied and looked after the sixteen live alligators. To get that number he had to bring his stock from Timperley, Cheshire, and assemble those he had on show in the several public aquaria and vivaria for which he is responsible. Mr. Jackson is now an experienced hand in supplying reptiles and amphibians for film production. He is the ideal man for the assignment—not willing to accept any conditions which would harm his animals, but ever ready to co-operate to get the best results. Also in the alligator cast were two owned by the circus performer, Koringa.

Altogether an interesting afternoon and one which gave us an insight into the informality, peculiarly combined with a ruthless questing for the right effect, which goes into the making of a film.

Club Notes and News

(Continued from previous page)

AFTER giving a talk to members of Yeovil A.S., Mr. V. Jones, Curator of the Aquarium at Bristol Zoo, judged the society's annual table show, for which there were 90 entries. First prizewinners were Miss S. Boon, Mrs. M. Bryant and Messrs. M. Enticott, W. Reeves, D. S. Langdon (four), D. Wood, R. Stone (two) and G. Aston.

THERE were fewer visitors at this year's open show of Bath A.S. but entries were only 10 down. Mr. W. L. Mandeville selected Mr. L. Littleton's Green Swordtails as the best pair of Livebearers, and Mr. Z. Webb adjudged Mr. E. R. Blunsden's Veiltail as the best coldwater fish; both exhibitors received WATER LIFE diplomas.

BEST tropical fish entry at the Standard-Kolster A.S. annual exhibition was Mr. B. Andrews' Penguin Fish. Mr. A. Shelton's Catfish was the best coldwater entry.

MEETINGS of Edinburgh A.S. are held every Tuesday at 28a Albany Street, Edinburgh, and visitors are welcome to attend.

A SOCIETY has been formed to serve the Middleton area of Manchester. Its secretary is Mr. R. Bennett, 25 Abbey Road, Hollins, Middleton, and its treasurer Mr. D. N. Thompson. The group is affiliated to

the Northern Federation and operates under the title Middleton Aquarists' Society.

RECENT activities of Hastings & St. Leonards A.S. have included a show organised in connection with Hastings Carnival Week, a home aquaria competition, and lectures from Mr. Edwards, Mr. R. O. B. List and Mr. F. C. Katritzky.

A SNAKESKIN GOURAMI, shown by Mr. H. G. Rundle, was best fish in show at the Bedford A.S. exhibition judged by Messrs. C. W. G. Creed and J. H. Gloyn.

MR. C. W. G. CREED judged an inter-club match between Hendon A.S. and Hampstead A.S. Hendon were the decisive winners by 35 points to 5, although Mr. Creed pointed out that both societies had fish of good standard.

FORTHCOMING programme of Halifax A.S. includes a lecture by Mr. A. J. L. Rashley on "Furnished Aquaria" (October 6), and one by Mr. Mackerall on "Breeding and Feeding Egg-layers" (November 3). The A.G.M. has been fixed for December 1.

A RECORD attendance of members and visitors was recorded at the first table show of Kidderminster A.S. when Mr. H. J. Yates gained a first award, and the Hillman shield for best fish in show, with his Dwarf Gouramies.