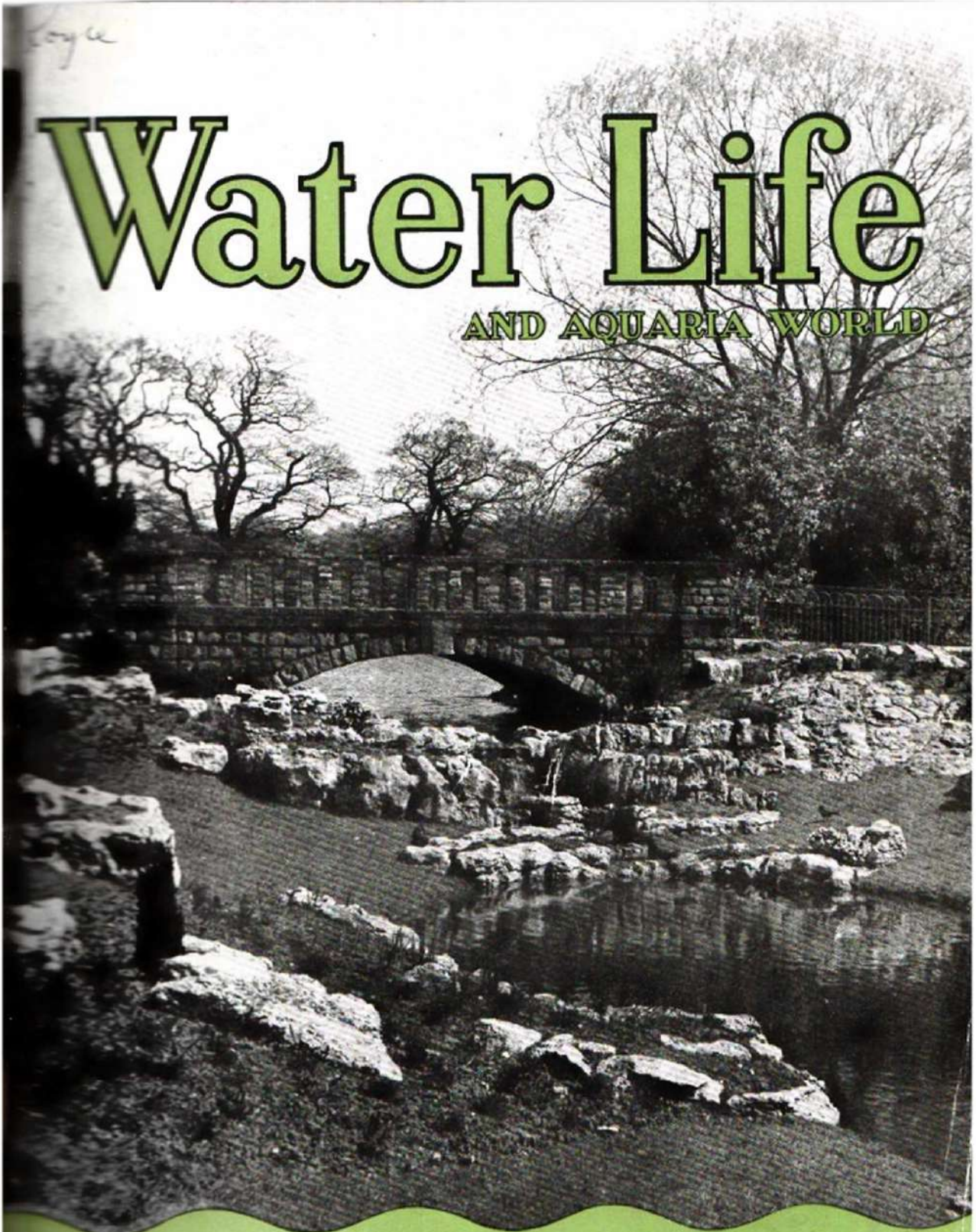


Loyle

Water Life

AND AQUARIA WORLD



OCTOBER—NOVEMBER, 1954

TWO SHILLINGS AND SIXPENCE

Water Life

AND AQUARIA WORLD

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FRONT COVER: AUTUMN SCENE.

With the background of trees, some already almost bare, others with leaves turning to golden brown, the bridge spans the channel connecting the lake and pools at Dulwich Park in South East London. Even when the flower beds are looking empty, the still waters, the outcrops of stone and the occasional evergreens make a scene pleasing to the eye.

Photograph]

[L. E. Perkins

VOL. 9, No. 5 (New Issue)

OCTOBER, 1954

EDITORIAL

Turning on the Heat

WITH the onset of a chilly Autumn and the knowledge that still colder Winter months will soon be with us, tropical fishkeepers have been giving thought, once again, to the problem of keeping their fishrooms at the desired temperature. Cautious fishkeepers have overhauled their heating apparatus; those who are economically minded have tried to improve the efficiency of their particular method of maintaining adequate warmth. The need for checking the accuracy of their thermostats has not been overlooked.

It is unwise to be dogmatic and say that one method is better than another in providing heat for tanks. Some swear by space heating; others prefer the use of individual immersion heaters. Those who use oil stoves are forced to employ the principle of space heating. If no electricity supply is available they have little alternative. They could consider using gas, either by installing units such as radiant type domestic heaters for general space heating or ranges of pipe feeds with small, controlled, baffled jets under the tanks. Some may be fortunate enough to have a gas- or solid fuel-fired outside boiler, serving a system of hot water pipes.

Prepared for Emergencies

For the tropical fish breeder in Great Britain heating is an all-the-year-round consideration, for the climate is such that only for short spells do we get outside temperatures high enough to permit the turning off of all the heat, without risking the welfare of our fishes. This year in particular, the Summer fuel bills have been high, through frequent visits of inclement weather. There have been cold, unseasonable conditions in those very months when we would normally expect hot, bright summery days. The resultant heavier demand on whatever apparatus or system employed has made all the more necessary a thorough check of all items to avoid the possibility of a sudden breakdown or of lower all-round efficiency occurring during winter.

A newcomer to the hobby will find it cheaper in the long run to buy the best quality apparatus he can afford if replacement, repair and running costs are to be kept down to a minimum. He can do worse than visit more experienced aquarists to see the steps they take to conserve heat in their establishments. He will also find it advisable to have by him at least one spare thermostat and one or two spare heaters if he is using electrical apparatus.

So much for heating. It is necessary to have good quality apparatus in use. It is not always necessary, however, to stick slavishly to one unvarying thermometer reading day in and day out. In fact, variations within reasonable limits are probably advantageous and it may help if we break away from the fetish that we must observe a narrow differential of plus or minus one degree when deciding on the normal temperature of the water in the tanks. Who knows? Inducement to spawn only when they are healthy and hardy, and a more normal span of life, may be the lot of those fish that live in aquariums subject to irregular though not excessive temperature fluctuations.

Supplying the Needs of Vivaria Inmates

5. Large and Small Snakes Make Fascinating Pets

By Alfred Leutscher, B.Sc.



Photograph] [L. E. Day
The docile Smooth Snake (*Coronella austriaca*) which makes a good pet.

They become devoted to a fascinating pastime which teaches them a great deal, for snakes are undoubtedly among the most wonderful and, at the same time, most unorthodox of creatures. Without limbs, they can crawl, burrow, swim, climb and even "fly". They swallow whole meals which put a healthy human appetite to shame, yet can starve for over a year. They may carry the deadliest of venoms, yet are rendered helpless with a light blow. They slough their skins in one piece, can "smell" with their tongues and sleep with their eyes open. So one could go on listing the remarkable feats of the serpent.

No wonder a snake devotee becomes attached to his pets, and is quick to correct the numerous stupid notions which are still written and believed in by so many otherwise intelligent people.

Signs of Good Condition

With the exception of venomous species, which are fortunately in the vast minority and never fully to be trusted, most snakes sold in the pet trade become readily tame with proper care and handling. Snakes in poor condition should be avoided. The body should be plump and firm to the touch. Thin and weak specimens are usually so because of sickness or starvation. The skin should be clear of blemishes (apart from clean, healed wounds), and free from fungus as this interferes with sloughing, an important and regular act in a snake's life. A good sign is the purplish "bloom" which can be seen reflecting from the skin. Any mites which are present should be removed, as these may carry a blood disease which often proves fatal. The tongue should be constantly in action, especially when the snake is anticipating a meal or senses danger. This sensitive organ, incidentally, is quite harmless, and is used to test the air for scent. If it is seldom exposed one should suspect trouble in the mouth, which may be gummed up with bacterial growth.

In selecting a specimen for one's collection, it is sometimes better to choose an aggressive rather than a docile snake unless, in the latter case, it is already tamed and is coming from a reliable source. Unless the creature is already tamed one will

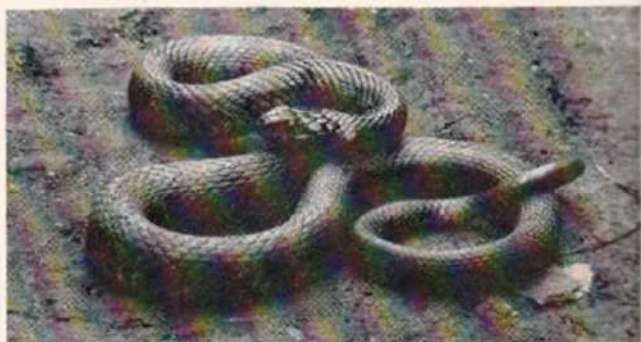
at least know that an aggressive specimen is fit and healthy. What type should we select as our future pet? This will depend upon a preference for small or large snakes, space requirements, and the cost. The question of food must also be considered, as it is no good keeping a snake which cannot be given the proper diet.

We may divide pet snakes into three categories, depending upon size. The following selection gives some idea of the range now to be had in Great Britain. Firstly, there are the small species which grow to about a foot or so. The North American Garter Snakes come into this group. Of these the Common Garter Snake (*Thamnophis sirtalis*) and the Ribbon Snake (*T. ordinatus*) frequently come over to this country. They are readily tamed, and soon feed on a diet of Earthworms, small fish and amphibians. They are "livebearers," and produce quite large families of up to seventy or more young.

Rare British Species

The Smooth Snake (*Coronella austriaca*) makes a delightful pet, and is one of my favourites because of its docility, good feeding and ready acceptance of captivity. Its main diet is lizards, with occasional baby mice. In Britain this little serpent is now rare, and requires protection.

The Continental specimens can more readily be had through dealers. Young Grass Snakes (*Natrix natrix*) either British or imported, the Dice or Tesselated Snake (*N. tessellata*) and the Viperine Snake (*N. maura*) make hardy little captives. All have rather similar habits, and feed on small frogs, toads, newts and fish. The two latter prefer fish, and are fond of entering water. At earlier ages these snakes are more attractively marked than the adults. The



Photograph] [S. Crook
The hardy and completely harmless Grass Snake (*Natrix natrix*).

adults will grow up to three or four feet, and in this second group we have a fine selection from which to choose, especially among the North American species. The Water Snake (*Natrix sipedon*) is a cousin of our Grass Snake, with a similar diet and a particular fondness for water. Like Garter Snakes it is viviparous. The most handsome American snakes are undoubtedly the many useful rodent hunters which prey on rats and mice. Small birds, lizards and eggs are also eaten.

By general consent among snake keepers, the King Snake (*Lampropeltis getulus*) in its many forms is looked upon as the prize of any collection. It is handsomely marked in

more black with wavy white markings and makes a docile pet, usually feeding well. Another favourite is the Milk Snake (*L. triangulum*) which is brownish in colour with darker blotches of brown along the back.

The Corn Snake (*Elaphe guttata*) and Pilot Black Snake (*E. amabilis*) can also be recommended. The former is tan coloured, marked with reddish blotches, the latter a shiny black. South Europe possesses three species of the same Genus. One is called the Aesculapian Snake (*E. longissima*) known as the "Healing Serpent" from Greek mythology, and discussed in WATER LIFE, February-March, 1950, issue. The second is a real beauty, called the Leopard Snake (*E. stictica*). Its name will give some idea of the colour pattern. The third, the Four-lined Snake (*E. quatuor-lineata*), has a grey-brown body, banded with elongated pale stripes. Another Genus, *Coluber*, includes the European Dark Green or Angry Snake (*Coluber viridi-flavus*), and an American relative, the Black Racer (*C. constrictor*). It is reputed to be one of the swiftest snakes, but is badly named. These two do not constrict their prey in true fashion, but hold it down in the coils to assist in swallowing. All the others (*Lampropeltis* and *Elaphe*) kill their victims in their own time.

I have found all the above species make good captives, which may cause surprise to some readers. This is partly because some specimens are inclined to be aggressive, and do not readily feed, as in the case of *Coluber* *viridi-flavus*, which has not been called the Angry Snake for nothing. This is partly the "lack of the game," as snakes are very individualistic.

Popular Large Pythons

Some people enjoy keeping the large snakes, which make up our third group. These are the various constrictors, which will all require some form of permanent heating to their cages. Many species are now imported, either as babies about three to four feet long, or adults up to ten or more feet. The most popular species seems to be the Indian Rock Python (*Python molurus*), especially the pale form. It has a good name for being docile and being ready to feed at most times. It is this species which usually appears in the circus act or music-hall turn. Snake charmers will keep one handy in order to impress an audience. Other large

snakes include the West African Rock Python (*Python sebae*) and the handsome Royal Python (*P. regius*), also from Africa. The various Boas are usually from S. America, and the Diamond or Carpet Snake is Australian.

The species which is inclined to be aggressive at times, is the Wavy or Reticulated Python (*P. reticulatus*), which rivals in size the S. American Anaconda (*Eunectes*). These two are among the world's largest snakes, and are said to reach 30 feet. Such pet snakes feed mainly on rabbits, cats, mice and birds.

Care at Higher Temperatures

Some people are terrified at the sight of a constrictor coiled around the body of its owner, and are ready to expect the worst. In almost every case the powerful pressure one feels from the coils, is merely the Python's way of holding on, as it would do on a tree branch, and not an attempt to crush an enemy. Such tame pets can usually be trusted not to crush or bite, and a wise owner will always cool his specimen before allowing strangers, especially children, to handle it. Snakes are more lively at the higher temperatures.

The homes for most snake pets follow a similar pattern, depending upon size, and may range from a small vivarium

to a large, wooden cage. There is no point here in going into great detail as to their construction, but a few general hints may come in useful. Firstly, this sort of home *must* be escape proof. Snakes will nose and lever themselves through the smallest cracks and holes, and can cause considerable alarm if found roaming about at liberty. Secondly, there should be ample lighting and access to sunshine, especially in those snakes which like to bask. Constrictors, incidentally, usually avoid direct sunlight. Thirdly, ventilation. This should be carefully arranged, in order to exclude draughts. Top ventilation is perhaps best (perforated zinc or fine wire netting, firmly secured to the roof). If a separate fitted roof is made, it can be placed on the top of this, and adjusted to control the heat inside.

Furnishing Their Quarters

Perhaps the most important consideration is the vivarium contents. It is very tempting to set out an attractive "garden" of plants in soil, as suggested for amphibians in previous articles, but there is a danger in this. The plants have to be watered from time to time, and snakes kept in close surroundings where this is done, are inclined to get wet skins. This may soon lead to skin troubles, because the animal would never get a chance to become dry. My advice, and this is quite personal, is to keep the snake's home *perfectly dry*. Snakes will live quite happily on dry earth or sand and even on bare wood. Some dry vegetation is useful for cover, and will assist in the sloughing process. Moss, dry bracken or heather, branches and rockwork all help in this. Old sacking is often put down for the large snakes. They seem to like to coil inside this. A dish of clean drinking water must always be present. Most snakes appreciate an occasional lukewarm bath and they can always be taken out for this treat.

Heating, where necessary, can be provided by an element or tubular heater, or a suitable light-bulb, depending upon the amount of heat or temperature required. Thermostatic control is also useful. Heat sources must always be out of the reach of snakes, since they will do stupid things, such as curling up in direct contact with the heater or bulb, and may receive burns.

Snakes behave in different ways; some tame readily, whereas others are ever ready to hiss and bite. Since none of the above are venomous the bite need cause no alarm. In biting, the sharp teeth may draw blood or lacerate the skin, but such an injury is no worse than a graze or scratch from a nail or thorn. The wound is merely cleansed and treated with an antiseptic then covered with a light bandage.

Hints on Handling

Actually snakes rarely seem to bite certain people who know them. There is a certain amount of "green finger" treatment about this, and I may be one of the more fortunate snake owners who is seldom bitten. It is as well to know certain points. Never make a sudden movement near a snake. When holding it do not actually grip or squeeze the body, but let it glide easily through one's fingers, from one hand to the other, or over one's shoulder and neck. The last takes considerable courage with people who have mistaken ideas about serpents. My experience is that they usually show surprise that the "evil, slimy creature" is actually dry, smooth and silky to the touch, and quite tame and gentle after all.

A particularly important point is that the head should not



Photograph [Fox] Marion Rix of Sutton and Semra Alioglu, who comes from Turkey, both aged 12, examine the markings of a constrictor owned by Mr. G. J. Boyce of Streatham.

Current Research

Salmon Migration and Environment

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

IN the June issue of *WATER LIFE* (p. 124) we discussed the work of Dr. William S. Hoar, of the University of British Columbia, on the physiology of migration. In a contribution to *Nature* (1954, Vol. 174, pp. 215-217) Prof. A. G. Huntsman, of the Fisheries Research Board of Canada and the University of Toronto, summarises his views on original observations on salmon migration carried out over the past 20 years.

"What fish do of themselves is simple enough," writes Prof. Huntsman, "but where they go is complicated by environment and weather". The Margaree River of Cape Breton Island is particularly suitable for studying the migration of local salmon, even for the sea portion when they are, for the most part, deep in the water and out of sight. When small salmon or parr that live for several years in the river are swept down towards the sea by heavy floods, they reach the Margaree estuary. Where the water is not so saline as to be lethal, these parr survive and ascend small streams that are tributary to the estuary.

Movements of Adults

When adult Margaree salmon are marked and liberated in the estuary after spawning they may or may not, depending on the floods, ascend the river and be found in it as late as the middle of the following summer. Eventually they are found only in the sea and, until they have again become fat and vigorous, only along the outflow of the river for some 10-20 miles to the N.E. of the coast.

Fat salmon that have ceased feeding and are wandering vigorously have been marked after capture in traps on the Margaree coast and released. The individuals appear to travel in every direction and recaptures take place at all points where there is gear to take them. As a whole, however, they are shifted by the water movements. They may be concentrated near the shore by near-surface currents from onshore winds, or concentrated near the mouth of the estuary by the return subsurface current that replaces the sea water entrained in the outflow. They are shifted not only offshore and onshore, but also to and fro along the coast by wind currents.

The wide dispersal through this banding about by the weather, as well as through wandering, was shown by recaptures from a batch of more than 30,000 fish that had been marked by fin-clipping when they were descending as smolts in 1938. Some of these were recaptured as fat three-sea-year fish in 1941 from various nets along the coast.

Behaviour of Smolts in Tidal Waters

The young Margaree salmon become smolts in the spring and descend to the sea after 2 years in the lower, warmer parts of the river system and after 3 years in the upper, cooler parts. They descend when it becomes warm enough for them to be active, and when light and low water do not keep them so close to the bottom that they are stimulated to head and swim upstream. Their behaviour in tidal waters where there is plenty of room may be observed when they are in the broad and shallow estuary before they are carried out in the strong currents and deep water of the spring tides.

They may be seen dispersed over the bottom, each one occupying a station and feeding on passing plankton. It is presumed that they do this where they are carried by the estuarial outflow to deep water, where they descend out of sight.

Limited Dispersal of Two-year-old Fish

It only becomes profitable to fish for the salmon when they cease feeding, and on wandering, become concentrated near shore or in the outflow. Few salmon do this as grise after the first year, but most of them do it after 2 years and a considerable number after 3 years. During the first part of the 1940 fishing season the two-year-old salmon that had been marked as smolts in 1938 were found only in the outflow and along the coast at distances of up to 20 miles from the mouth of the estuary. They were more abundant near the inner part of this zone, which was where they had evidently settled as smolts. In the following year the three-year-old salmon that had been marked in 1938 appeared later in the season than the two-year-olds had done in 1940, and along a greater part of the outflow.

Stimulated by Fresh Water

In both seasons the distribution of fish later became less and less distinct due to the wandering of individuals, but the inference was that the three-sea-year fish settle farther offshore in deeper and cooler water, where they mature more slowly and are exposed later in the season to vernal warming. Where they settle determines their remaining a longer time in the sea and attaining a greater size.

In the course of these studies it has been found that while individual fish may quickly reach and enter the river—one has been found to return from Newfoundland—the entrance of adult salmon into the estuary depends in the main on the carrying of the fish into the estuary or close to its mouth. Actual ascent of the river from the estuary depends upon freshets (i.e. streams of fresh water) which stimulate the fish to greater activity.

Supply the Needs of Vivaria Inmates

(continued from page 225)

be tampered with as a snake is most sensitive there. After being handled a while it will probably settle down over one's shoulder in one's hands, and actually seem to enjoy the warmth and proximity of its new-found human friend. Yes, there is a lot to be said in favour of serpents.



Photograph

[Lotus Ph. Service

A specimen of the Indian Rock Python (*Python molurus*) photographed in Bombay where it was kept as a pet.

Tooth-carps of the *Aphyosemion* Genus (2)

Tank and Food Requirements—Incubation
Period as a Convenient Method of Division

By F. Bates, B.Sc.

IN the last issue I referred to the fact that the water in which *Aphyosemion*s are found naturally is heavily shaded and, in the aquarium, they certainly do not appear to relish too strong a light. Indeed, it has been said that exposure to full sunlight for an hour or two is fatal to some species (cf. *caradacum*) but, as my tanks are lighted by electricity, there has been no chance of testing this even if I were willing to make such an experiment. If the aquarium is in a window it is necessary to plant it heavily on the side where the light enters and either to use such plants as will grow sufficiently long to trail over and shade the surface or to use floating plants. If artificial light is used then surface shade is necessary. I do not intend to describe how and with what plants the aquarium should be planted as this is a matter for the individual taste of the owner but it is perhaps worth mentioning that *Cabomba*, *Cryptocoryne*, *Linnobium subuliferum* (*Trianea bogotensis*) do well under the conditions described.

The tank should be maintained at a temperature of 70-74 deg.F. and it is preferable that the temperature should be a degree or two lower rather than higher. This is particularly true in the breeding tank, for almost all authorities are agreed that a rise in temperature above 75 deg. results in an increase in the period of incubation, and a decrease in the number of eggs successfully hatching. The reason for this seems somewhat obscure.

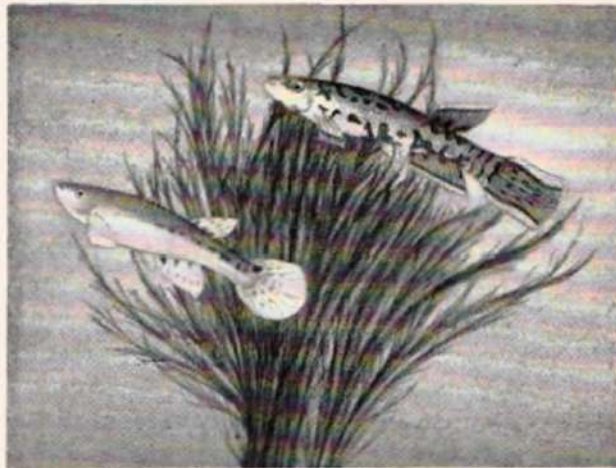
Effect of Rise in Temperature

An American authority states that a rise of 2-3 deg.F. above 75 deg.F. results in the doubling of the incubation period and attributes this to the decrease in the oxygen content of the water at the higher temperature but this seems rather overdone as such an increase in temperature would only cause a drop in oxygen content of something in the nature of 2 per cent and it is difficult to imagine that such a decrease could in itself, so greatly affect the rate of development of the embryo. Again, if this were the only factor concerned, we should expect to find that a temperature of 72 deg.F. would have an effect almost equally as great in the reverse direction and reduce the period. It seems to me that two other explanations are possible; first, that the outer membrane of the egg becomes thickened and rendered more impervious to the passage of oxygen at this higher temperature, or, secondly, that the rise in temperature causes a reduction in enzyme activity within the egg. It must be emphasised, however, that I have no material evidence to support these views and that they are put forward purely as theoretical suggestions.

If *Aphyosemion*s are to be kept in a healthy condition, and certainly if they are to breed, they must have a liberal supply of live-food. This does not mean that most of them, if they are sufficiently hungry, will not take dried food. I know of one aquarist who reared a number of *A. blvittatum* on a diet which consisted solely of prepared dried food, although, of course, this in itself would tend to encourage the development of infusorians which doubtless helped in the early stages. But such a diet is not to be recommended and, even if successful, growth is slow.

If possible, a diet of bloodworms (*Chironomus* larvæ), Glassworms (*Chaoborus* larvæ), gnat and mosquito larvæ and *Daphnia* is ideal, while for fry I use nothing but the finest sifted *Cyclops* and *Daphnia*. The newly hatched young are large enough to take these and there seems no need to

bother with Infusoria. In some circles there is a tendency to decry *Daphnia* as a food and to state that it has little nutritive value; be that as it may, I have raised Blue Gularis to a large size and had prolific spawnings from fish which had been fed exclusively on *Daphnia*. While the livefoods mentioned are, in my opinion, the most valuable, Earthworms are a useful alternative when other forms are not readily available and, under these conditions, *Tubifex* and White Worms (*Enchytrae*) may be used, but I never employ these if other livefood is available. This may be due to sheer prejudice on my part but there is a considerable body of opinion which does not think White Worms a suitable food for *Aphyosemion*s. There is no unanimity on this matter, however, and I know of one fancier who fed large quantities of this food to his Lyretails and still bred from them very successfully. Perhaps it is all a matter of degree and that a



Male and female *Aphyosemion calabaricus*, a species described after Myers' original list was published (Group 1 incubation period).

diet consisting almost of *Enchytrae* is too fattening and not conducive to prolific spawnings. The larger species will take Water Boatmen (*Corixa* and *Notonecta*), beetle larvæ, *Aelium* and even small *Dytiscus* and Dragonfly larvæ avidly but, if feeding these, particularly to fish in their breeding quarters, it is as well to watch to see that they have been eaten.

Brilliant Colour Patterns of Males

The Genus *Aphyosemion* is certainly one of, and perhaps the most attractive of all the small tropical fishes suited to freshwater aquaria and this despite the plainness or even drab coloration of the females, for the beauty of the males more than compensates for the modest hues of their mates. There is great variation in colour and fin formation in the group but certain basic patterns are common to many species. Thus we have the irregular markings of red-brown on a blue green ground in the anterior section of the body and this pattern often tends to change into a series of short vertical bars towards the caudal base, while dark marginal or sub-marginal bands in the single fins are prevalent. The brilliant or, in many cases, delicate blending of colours is further

enhanced by the elegant and, at times, almost bizarre formation of the fins, particularly the caudal. This applies especially to species such as the Blue Gularis (*A. caeruleum*) Yellow Gularis (*A. gulare*), Lyretail (*A. australe*), and *A. bivittatum*, etc.

Again it must be emphasised that their coloration varies according to the mood and health of the fish and that the fish are only seen at their best under congenial conditions, particularly when about to spawn, as there may then be a distinct change in the colour patterns, but such will be mentioned when dealing with the individual species in another article. Descriptions are available, of course, for all known species but these have often been made from preserved specimens and give little or no idea of the appearance of the living fish and I therefore only intend to deal subsequently with those species of which I have had personal experience.

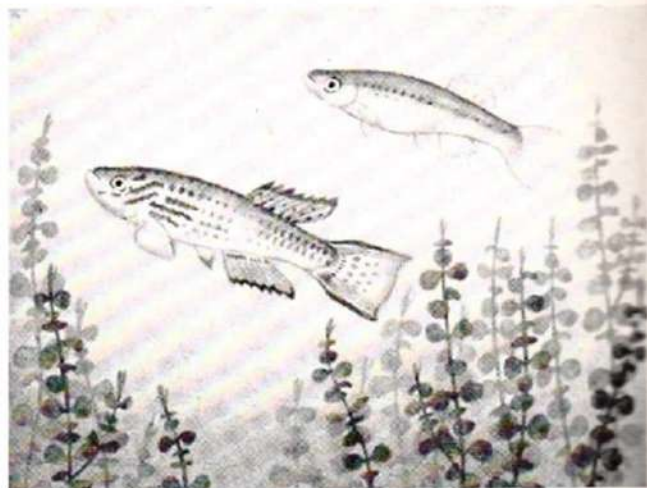
Before discussing individual species it may be as well to consider the species from a breeding point of view and from this aspect it appears probable that the fish fall into three groups though these do not coincide exactly with the three sub-genera of Myers. If we consider the species in relation to their incubation period we find that, broadly speaking, those which have been bred under aquaria conditions have incubation periods normally of 12 to 14 days, of four to six weeks or of 60 days or over.

Three Groups of Incubation Periods

It is likely that all the species fall into one of these three groups. At any rate I think that such may be considered a working hypothesis until someone disproves the idea.

GROUP 1 consists of those species whose normal incubation period is from 12 to 14 days. This group contains all species of the Sub-genus *Aphyosemion* together with those members of the *Fundulopanchax* Sub-genus which are closely allied to *A. bivittatum*, i.e., *A. bivittatum bivittatum*, *A. bivittatum hollyi*, *A. multicolor*, *A. splendoplearis* and, possibly, *A. hitaniatum* and *A. unistrigatum*. *A. australe* may be taken as typical of this section.

GROUP 2. Incubation period of these fish varies from four to six weeks (perhaps five to six weeks would be more accurate, on average, but I have extended the period to include instances of *A. caeruleum* eggs hatching in the shorter period). This Group consists of the remaining



Pair of *Aphyosemion gardneri*, whose incubation period is in Group 2.

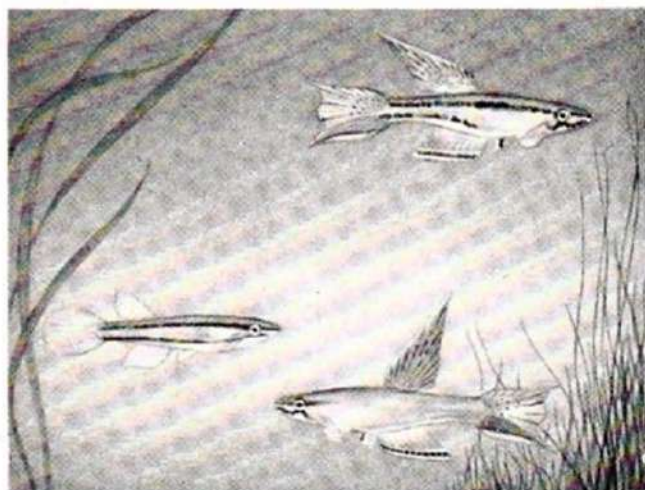
members of the rather big Sub-genus *Fundulopanchax*.

GROUP 3 consists of fish having incubation period of 60 days and upwards. One species, *A. sjæstedti*, is represented, which itself comprises the Sub-genus *Callopanchax*.

It must not be inferred from this division that eggs of the various species will *always* hatch within the periods prescribed. It has previously been noted that these may, under certain conditions, be greatly prolonged but under normal conditions, with the temperature kept at a maximum of 75 deg.F., the bulk of the eggs should hatch within the time stated. At times some eggs appear to take an unduly long time to hatch. Dr. E. Meder suggests that this is due to a lack of Infusoria in the water and that if a little dried food is sprinkled on the surface of the water to encourage the development of protozoans, hatching will be hastened. He attributes this to the Infusorians attacking the outer membranous covering of the eggs and so weakening it to such a degree as to aid the emergence of the fry. I have no experience of this and can only report the statement.

In the past much doubt has been caused by various authorities—and sometimes even the same author on different occasions—giving incubation periods which widely differed. Because of this, one is inclined to think that such authors have not written from their own personal experience. Whilst I have suggested that the Genus might be divided into three main groups on the basis of incubation periods I have no practical evidence to back up this idea in the case of some species but it seems likely that my division may prove valid when my own experiences and the accounts of other breeders are taken into account. When dealing with the individual species the incubation period given will be based on my own breeding records except where specifically stated otherwise.

Before describing particular species that I have had at some time or other, let me give one word of warning. It is an absolute necessity if one is to keep *Aphyosemions* to see that the aquarium is covered with a tight-fitting cover. Until one has had practical (and costly) experience of the ability of these fish to jump, it seems incredible that they should be able to leap through the small gaps that they do, and a few seconds spent in seeing that the top glass is replaced correctly is worthwhile.



Trio of *Aphyosemion bivittatum* (female on left) whose young hatch after a short incubation period, normally 12 to 14 days' duration.

The illustrations to this article are taken from water colour paintings by the author's brother Mr. A. Bates, B.Sc.

PONDKEEPER'S YEAR

Root Division of Rock and Marsh
Plants—Building Up the Fishes' Food
Reserves—Constructional Work at
the Poolside

— By J. Stott —

(Photographs on this page by the Author)



The attractive *Spiraea Gladstonii*, a marsh plant.

IN the early part of October it is surprising how often we are favoured with a period of warm weather and, when this occurs, full advantage should be taken of the opportunity it offers to provide the fish with supplementary foods which are fat producing and so encourage the building up of reserves for the Winter months. Biscuit meal, oatmeal, Bemax, brown bread crumbs and the like are foodstuffs suitable for this purpose. They should, however, not be given in large quantities at one feeding but should be offered a little at a time at reasonably frequent intervals. This will help to avoid overfeeding and wasted food. The fish will obtain all the proteins they require at this time of the year from the naturally-occurring livefoods which will be present in the pool without adding to the supply.

Propagating Perennials

Late September and early October are good periods for the propagation by root division of some of the perennials which are used in the marsh and rock garden surround. Those species which flower early are the best subjects. The marsh-loving *Spiraea* may be divided at this time of the year. Here is a Genus of showy, attractive plants which are extremely useful to the pondkeeper from a decorative point of view. They appreciate moist loam enriched with well decayed cow manure and leaf mould. There is a wide selection of species and varieties to choose from ranging in height from approximately 12 in. to several feet. Early flowering *Primulas* such as *Primula Bulleyana*, *P. rosea grandiflora*, *P. vulgaris* and *P. japonica*, which are suitable for planting in the drier parts of the marsh, may be propagated by this method in the early Autumn.

In the rock garden surround, Autumn propagation of early flowering alpines and rock plants is to be recommended. They can also be planted at this time of the year if it is desired to make additions to the rockery or rock garden. *Alyssum*, *Aubritia*, *Arabis*, *Dianthus*, *Helianthemum*, *Iberis*, *Saxifraga*, *Sedum*, *Sempervivum* and *Silene* are some of the species which may be introduced now.

It is important when planting alpines, to remember that good drainage is one of the principal needs for success. During the growing season plenty of moisture is, of course, needed but waterlogged and stagnant conditions are deadly. Secondly, the importance of having a suitable soil mixture to produce maximum results for the various species should be emphasised. Finally, the right position for planting should be selected. Disappointment is often avoided



Saxifraga sanguinea superba suitable for the rock garden.

if details of this nature are obtained from suppliers when alpine plants are purchased. This is particularly important if previous experience with any particular species is lacking.

A close inspection of the rockery or rock garden should be made at this time of the year, paying especial attention to the rocks to make certain that all are firmly embedded and none of them is loose or insecure. All weeds should be removed and burned, along with dead foliage and fallen leaves. If some of the more rampant growers have developed excessive growth and spread beyond the limit of their allotted area they should be severely trimmed back and thinned out. Top dress the pockets with a fifty-fifty mixture of fine, well-sieved soil and coarse sand and spread gravel or limestone chippings where needed, according to the requirements of the particular plants, especially within the vicinity of those subjects which require protection from surface damp during the Winter period.

The marsh or bog garden should also receive a top dressing of leaf mould after removal of all unwanted weeds. A little peat may be added to the top dressing for application to those parts of the marsh where peat-loving plants are set. Allow this dressing to remain on the surface for two or three days, then fork it lightly in. Cut back all dead and decaying foliage of those perennials which have completed flowering.

Where ferns are used it should be remembered that the dying fronds of the deciduous types must not be cut away at this time of the year because they form a natural protection to the crowns throughout the Winter. The dead fronds should be cleared away in the Spring when signs of new growth are seen.

Thinning-out Aquatics

If the routine work of October has been carried out thoroughly November will find the pond and its surround ready for the final preparations for the Winter months ahead. It should now be convenient to cut away the old leaves of the Water-lilies, *Aponogeton* and other aquatics which throw up surface leaves. Thin out underwater growth where needed and cut back waterside rushes and reeds, clearing away all spent foliage, which should be burned. Skim the surface free of debris and, especially with the small



Iberis sempervirens, a hardy white flowering subject recommended for rock gardens.

pond, clear the base of all fallen leaves and excessive mulm and make certain no decaying matter is overlooked. A clean pond should winter well and offer healthy conditions for the fish which, provided adequate depth is available, will find protection from surface cold in the deeper water.

Unless the pond is very small it is not usually necessary

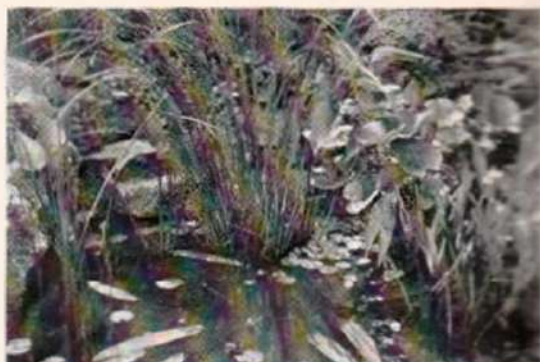
to drain off, clean and completely reset every year; once every two or three years should be sufficient if the pond remains in a healthy condition during that period. When a thorough cleaning is needed, however, November is a good time for doing the work and during the process it is important to make sure that the fish are not damaged whilst being netted or subjected to excessive temperature variations; chills or damage so near the Winter will not help their powers of resistance.

As far as feeding is concerned adjust the quantity according to the requirements of the fish. With the lowering of the water temperature less food will be consumed but the Autumn diet should be adhered to as long as they will feed.

Early November is a good time for making alterations or extensions to the surround. The construction of new ponds, rock gardens, moraines or scree gardens may be started now with every chance of completion before the frosts commence. After this month the possibility of severe weather makes the work of construction extremely risky and it is then wiser to leave activities of this sort until the Spring.



Photograph] [L. E. Perkins
Postford White variety of
Primula japonica.



Photograph] [H. Bunn
Corner of a water garden in which are growing Kingcups, Sedges, Pontederia, Japanese Arrowhead, Cape Pondweed, Frogbit, Water Buttercup and *Nymphæa odorata* minor.

In the August number of WATER LIFE I mentioned the decorative possibilities of shrubs in the water garden or pond surround. Both the evergreen and the deciduous species may be planted now but remember to place the deciduous shrubs well back from the pond edge because of leaf shedding in the Autumn. When planting shrubs avoid cramping the roots. Dig the hole not only deep enough but also wide enough to take the full root spread and when covering with soil tread down firmly. A little leaf mould worked into the soil around the roots will be beneficial.

Aquatic Plants

IN imports of aquatic plants from tropical climes it is quite general to find species uncommon to aquarium keepers. The majority of these subjects are for the specialist and only occasionally do we find one which attracts such universal acclaim that it challenges the popularity of a well-established type. This was the distinction of *Hygrophila polysperma* and it is difficult now to imagine that the species has only been with us for a comparatively few years. Nowadays it is one of those plants almost invariably available from dealers and its ease of propagation has made it one of the most popular for tropical aquarium decoration.

Creating Impression of Depth

H. polysperma is not of outstanding form but is of particular use for giving an impression of depth when set *en masse* or for breaking the harshness of rockwork when planted in more modest bunches. The leaves are orthodox in shape being more like elongated privet. They are borne in opposite pairs and their major distinction is bright, light green colouring. Here they differ considerably from *Ludwigia* species which are broad dark green and/or purplish. The brightness of *Hygrophila* has tended to make it more popular than the old favourite, *Ludwigia Malortii*, although there is a place for each in the furnished aquarium.

In the mention of ease of cultivation it should not be thought that one cannot fail to produce good plants. Whilst it would be difficult to have complete lack of success under tropical aquaria conditions, the leaf size can vary very considerably. Inadequate light will encourage small leaf formation and for

Hygrophila polysperma

full development—1½ to 2 in. long—at least moderate light intensity is required.

Propagation is effected from cuttings, roots being thrown out freely from the leaf nodes. The only tricky period is immediately after the cuttings have been set in the aquarium gravel. For a short time there is a tendency for leaves to be shed, but once this is over, growth should be rapid and luxuriant. If a bushy effect is desired the tips can be nipped out to encourage branching. Speed of growth makes the plant unlikely to attract large quantities of unsightly algae.

H. polysperma is native to India where it is likely that it grows as a marsh, as well as a submerged, plant. From its habitat one would assume that it is solely for the tropical aquarium but it has been suggested for coldwater tanks. There seems little doubt, however, that it is at its best in the temperature range of 70-80 deg.F. and the Federation of British Aquatic Societies subscribes to this idea by placing it in the tropical section of its list of plants recommended for furnished aquaria.



Water—the Basis of Fishkeeping

3. Rapid Physico-Chemical Changes in Aquaria

By WATER LIFE Analyst

THE importance of dissolved mineral salts and gases as factors greatly influencing the fertility of water, has already been stressed in the two previous articles. Thus, freshly boiled distilled water which would only contain minute traces of dissolved mineral matter and gases, could not support either aquatic vegetable or animal life, and indeed fishes would very quickly die from asphyxia owing to the almost complete absence of dissolved oxygen. The values for content of mineral salts and dissolved gases (physico-chemical conditions) in large volumes of water, such as naturally-formed lakes, undergo constant changes owing to the physiological processes carried out by submerged aquatic plants. Thus during periods of active photosynthesis there is a considerable removal of carbon dioxide gas, even from soluble calcium bicarbonate which is then precipitated as the insoluble calcium carbonate (chalk), causing at the same time a decrease in the hydrogen ion concentration (pH value).

This precipitation of calcium carbonate is very often the cause of the appearance of a milky turbidity in fish tanks containing calcareous water. In small volumes of water, physico-chemical changes are extremely rapid, especially when vigorous plant growth is present. Removal of carbon dioxide by plant life is attended by the liberation of an almost equal quantity of free oxygen, and the activity of submerged water plants including the algae in the presence of sunlight, is such that about 2.5 times as much oxygen is produced during growth as the weight of carbon in their tissue.

Super Saturated with Oxygen

Aquaria water, in contact with vigorous plant growth receiving an adequate and suitable source of illumination, may become "super saturated" with dissolved oxygen. This is possible because saturation values are referable to the saturation of water with oxygen in equilibrium with the atmosphere, of which only one fifth of the pressure is due to oxygen gas. It is therefore theoretically possible for water in equilibrium with pure oxygen to have a saturation value of 500 per cent, and in this connection it may be recalled that at a temperature of 6 deg. C. (42.8 deg. F.) and at 100 per cent of saturation, water would contain $\frac{1}{4}$ th of an ounce by weight of oxygen gas in solution; therefore at the same temperature and at 500 per cent saturation there would be 1 ounce by weight of oxygen gas in solution.

As a point of interest, the writer has recorded dissolved oxygen values as high as 130 per cent of saturation from one of his tanks which is situated in a window facing west. Highest recorded values are always obtained during late afternoon when the sun's rays strike the bottom gravel upon which attached algae have been allowed to grow. Minute bubbles of oxygen gas then cover the surface of the gravel over an area of 600 square inches. This particular tank is used for experimental feeding with high value protein foods to a heavy fish population, maintained at a temperature of 24 deg. C. (75 deg. F.), and water in such a tank would very quickly become foul if it were not for the fact that a most vigorous growth of plant life is encouraged and maintained.

Re-aeration by oxygen from the atmosphere alone can only proceed by oxygen being dissolved into water, i.e. forming a solution. This physical process takes place only at, and in, the water surface in contact with the atmosphere. Gradual diffusion of the dissolved oxygen from the surface

into the lower and less well aerated layers of water then proceeds. Because physical surface re-aeration takes place in an extremely thin film of water a considerable lapse of time must occur before diffusion is completed to saturation point in even small bulks of water. In order that the lower layers of water in aquaria may be exposed to the atmosphere means of causing a turbulence are sometimes resorted to by the use of "aerators". The effectiveness of this method is of course entirely dependent upon the time taken for the bulk of water to be exposed in extremely thin films to the atmosphere, and to the immediate demands made for dissolved oxygen by the living organisms present in the water. In many cases sparsely planted tanks, even when "aerators" are used, present dissolved oxygen deficiency problems. Overstocking, overfeeding, and the zeal with which algal growths are discouraged serve to establish stagnant conditions in the tank.

On the other hand, a well planted tank does not normally

present oxygen deficiency problems. The leaves of aquatic plants offer a relatively large surface area from which during photosynthesis, an atmosphere of pure oxygen gas is in intimate contact with the tank water. The encouragement of some attached algal growths in tanks, whilst desirable, is difficult to control in order that they do not get out of hand. It will be recalled, that in my large experimental feeding tank, I have been fortunate in having an algal growth covering over the gravel, and with the exception of removing gross growths of *Ceratopteris thalictroides* (Indian Fern), the gravel has not been disturbed since the tank was set up four years ago. The sides of the tank are regularly brushed twice a week, but at the ends of the tank a thick mat of algal growth has been allowed to remain undisturbed. A feature of the plants present in the tank is the water lilies (variety at present unknown), and although the tank is only 10 inches deep the stems are 36 inches long with leaves 8 inches in diameter. The water is kept at a pH value of 7.0 and is hard in character.



Photograph [G. J. M. Timmerman]

The Indian Fern (*Ceratopteris thalictroides*) the only plant whose growth was controlled in the experimental tank.

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In the first article of this series appearing in the June 1954 issue a classification for "hard" and "soft" waters was given. As there is no sharp line of demarcation between "soft" and "hard" waters gradation is expressed in general terms such as "moderately soft", "slightly hard", "moderately hard", "excessively hard" etc. Results of recent research on fish culture, by European workers, show that

— Know Your Fishes —

No. 35. Blind Cave Fish

(Anoptichthys jordani)

Photograph]

[Wm. Hoppe

Blind fishes are not unique but when a sightless Characin was collected from Mexico and sent to the United States in 1936 it created quite a sensation. Here was a fish, *Anoptichthys jordani*, which seemed fairly obviously to have developed from the lively *Astyanax mexicanus*. No doubt the reason for the loss of sight was that, generations previously, normal fish had found their way into dark subterranean waters at San Luis Potosi in Mexico. The fish no longer saw light and their eyes became functionless. In specimens collected now the eyeballs are rudimentary and grown over and the fish are quite blind. Usually where such a modification occurs the fish become endowed with another type of sensory organ, often in the form of barbels which help to make up for the lack of sight.

Anoptichthys jordani has no such obvious assistance and it might be thought that because of this it would suffer severe inconvenience and bump against any object in its path. This is not so. Under aquarium conditions, it shows considerable dexterity in avoiding all objects whether rock, glass sides of the tank or other fishes. Only rarely does it touch anything and then only fleetingly.

Altogether it is a strange fish with a peculiar fascination for it does not excite pity and actually seems to enjoy the company of other species. At feeding time—when it will eat live or dried food—it is well able to take a fair share of food and when many other fish have lost interest it scavenges around the bottom picking up the crumbs from its more richly favoured brethren's table. Although happy with other fish it has shown a partiality for small specimens so any fish considerably smaller in size than its own 3 in. should be excluded. Its temperature tolerance is wide, ranging from 60-80 deg F.

Blind Cave Fish have been imported into this country and seen on the show bench where their facility to manoeuvre around a show tank invariably brings admiring comments.

Breeding has been achieved in aquaria but not, so far as is known, in this country. The pair come alongside each other and eggs are extruded which drop to the bottom of the aquarium. The parents are not averse to making a meal of them so both fish are best removed after completion of the spawning.

Colour is unspectacular but pleasingly delicate, the body being a translucent pink with the scales showing iridescent silver in certain lights. The fins are clear of colouring and an adipose fin is present.

Class: Pisces. Order: Ostariophysi. Family: Characidae. Genus: *Anoptichthys*. Species: *A. jordani*.

Water—the Basis of Fishkeeping

(Continued from previous page.)

maximum fertility of the water cannot be obtained by the use of manures unless a calcium content equivalent to 65 parts per million of calcium carbonate (one of the mineral salts causing hardness) is also present in the water. This is interesting in so far that in the English rocky lakes in which only Trout and Char of the larger fishes are found the average calcium content of the water is only 3 parts per million, whilst in the more productive lakes, in which a greater variety of fish exist, an average calcium content of 12 parts per million is found.

However, perhaps the most interesting fact is that with the use of manures to boost the fertility of water in order to gain a really high production rate of fish life, a concentration of only 65 parts per million of calcium carbonate is required, and that the water would still be classified as "moderately soft" in character. Thus, although it has been shown that a minimum content of calcium is needed in water to which fertilisers have been

added in order to produce a greater growth of primary producers (algæ and rooted vegetation) and which, in turn, maintains a high production rate of fish life, no evidence is as yet available that calcium must be considered as directly essential for fish life. It would seem therefore that under the highly artificial conditions in which fish are kept in aquaria, and where most of the food fed to such fish is not of aquatic origin, or at least is not produced in the aquaria, that it would not greatly matter whether the water was "soft" or "hard" in character. This problem will be discussed in greater detail in the next article.



Photograph]

[WATER LIFE

Part of a large stretch of natural water at Knowle Mill, Warwickshire where a large number of fish live and breed undisturbed. The edges of the lake are well filled with water lilies and other aquatics and many submerged plants are to be found.

Propagating Water Plants

Various Ways of Increasing One's Stock

By E. J. King, M.A., F.L.S.

SOME very desirable, if somewhat expensive, water plants can be easily propagated by the amateur. The price asked for these subjects is not always a fair indication of difficulty in propagation; in the case of Water-lilies, for example, it is partly the result of having to keep many varieties separate, and partly because of their slowness and intransigence in growing. The amateur who can obtain suitable propagating stock from an acquaintance can easily develop a good plant without trouble to himself, and without any disadvantage to the parent plant.

Rapid propagation can be obtained in many ways. For example, as we are dealing with Water-lilies and can use them for illustration, a whole plant of a species whose rhizomes are normally submerged can be set out in a moist herbaceous border for a whole Summer if necessary. It seems to come to no harm if kept watered; indeed, it is much more likely to send out many new shoots than it would be if it were still at the bottom of a pond. These shoots can be fostered for a while by being kept covered with a pane of glass on the top of a small wooden frame and then they can be cut off neatly for growing on elsewhere. There is no real need to place glass or other covering over the old rhizome, but if most air surrounds the shoots as they form, the leaves are less likely to become withered. For the best effect, the rhizome should be made to sit on top of the soil like a flag into rhizome, with the fleshy roots finding suitable encouragement below.

If this seems a little drastic, or if only a small piece of rhizome can be secured for propagating purposes, it may be better to grow it under a fairly close glass cover such as a large jam-jar inverted in some fairly warm, but shady, place. Normally a good young growing end of a rhizome makes the best material but even the old spent pieces which are unlikely to do any good when left on the parent plant can be made to sprout very well when taken off.

If you have to start in this unpromising fashion it will probably be better to place the piece of rhizome with only about $\frac{1}{2}$ in. of water (or even less) in a jar with a screw top, such as a honey jar, and leave it in a dark cupboard where it will be warm without being too hot. There, within about a fortnight or so, it will almost certainly show a few shoots. These should be treated with great care and allowed to grow on a little in the light. They are drawing their food from the old rhizome, and before long they may begin to put out roots of their own. At this stage, or earlier if they are large enough, they can be potted on in the way described later.

Pieces of rhizome treated in this way practically never "go bad" if there is any reasonable life in them; but a good assurance against decomposition is easily provided by resting a layer of living sphagnum moss at the bottom of



Photograph

[L. E. Perkins

An attractive Water-lily with a white flower (Nymphaea alba).



Photograph [L. E. Perkins
American red-flowered Water-lily, Nymphaea J. Brydon.

the jar. Sphagnum not only has remarkable powers of absorption and regeneration (for it can quickly resume life in suitable conditions after being dried right out) but it certainly seems to possess the capacity of preventing decay in other plants made to root in it. We shall return later to this useful feature, simply noting now its qualities as a moisture-retaining medium in a closed jar. I have used sphagnum in jars in this way for over a year without any ill-effect, although the temperatures ranged from freezing to greenhouse summer heat.

Sandstone and Brick Chippings

Plants which form fleshy roots, like Water-lilies, should be encouraged to make roots in small pots with rich old mould or a little old manure at the bottom, and a rougher mixture at the top. Not all plants will tolerate a very limey soil; therefore, if the chippings at the top of the pot can be of porous sandstone or crushed brick, so much the better. Crushed brick has many sterling qualities in plant propagation generally, because it absorbs enough moisture to serve the growing roots but will not become waterlogged unless the potting medium is submerged. I use it for Water-lilies and cacti, and everything in between. In suitable cases it can be mixed with chopped-up sphagnum moss.

Pots containing little offshoots of Water-lilies or other aquatic plants should be stood in shallow water in a warm place away from scorching sun-rays. If many are being grown, the little pots can be stood in sinks in such a way that the water is just about level with the top of the soil, or perhaps slightly above it. The sinks themselves should be covered with glass, if possible, to keep the air moist above the growing young plants. Unless rooting has really taken place, there is no advantage in giving too much light. On the contrary, rooting is encouraged by darkness, within reason. It should be remembered, also, that the best rooting always takes place from the base of the new growing shoots, and not from the older parts.

Control of Water Depths

If the plant being propagated is a submerged aquatic, like a Water-lily, the depth of water can be gradually increased; but it should never exceed about three inches with young plants. It is not always realised how many of the most admired aquarium and pond plants are really marginal or mud plants in their natural state. Many of those which can endure fairly deep water will propagate themselves naturally by seeds or broken pieces which drift towards the mud and there start a new life. Only when they are fully established do they work their way gradually out into the deep water again.

Another point to bear in mind is that marginal mud is

warm. It quite often has more aeration than we suppose, and certainly more warmth and aeration than mud at the bottom of a deep pond. These factors, together with the richness of the food supply, make it relatively easy to secure rapid increase of many plants along the margins of a shallow pool, or in a shallow sink containing suitable compost.

Plants such as *Vallisneria*, many kinds of *Sagittaria*, and the Amazon Sword Plants, creep over the bottom by means of stolons.* Given good light (as in the amateur's tomato greenhouse) they will provide wonderful increase in a few



Amazon Sword Plant (*Echinodorus intermedius*) a subject producing stolons or runners. (Photo G. J. M. Timmerman).

inches of water but it is necessary to make sure the stock plants have the right treatment before expecting them to increase. So often they are buried too deeply with a most disappointing result that could have been avoided. Most stolon-forming plants simply let the "knee" or "knuckle" of the stolon rest upon the soil, so that the base of each new individual is really on top of the mud or soil. It will be found that stolons for increase will be much more freely formed in plants of this kind if the old specimens are simply weighted down on top of the rooting medium. More lush growth and greater increase will, of course, be obtained if the parent is already rooted in a little pot before being transferred to the propagating place.

Although plants like the Indian Fern do not increase by stolons, they also will do much better if they are allowed simply to sit tight on the top of the rooting medium, being secured in position, if necessary, by a little piece of lead. Plants increasing by stolons or runners (even if they are floaters, such as Frogbit or Water Lettuce) should be allowed to dangle their roots in mud; the separate young plants would not be detached from the parent until well rooted.

Plants which make tufts (e.g. *Cryptocorynes*) can often be encouraged to give increase simply by being allowed to float at the top of a tank with reasonably rich plant food in it. Then they bush out quite surprisingly. Ample plant food is afforded if there are one or two rabbit droppings (or equivalent) in the water. No attempt should be made to provide an excessive strength, which will do damage. Plants, especially water plants, get most of their food in exceedingly weak solutions; moreover, water plants take in a large proportion of it through their leaves. In fact, it was not realised until recently how much land plants, too, were able to absorb through their leaves.

If it is known that plants have special preferences with regard to acidity (generally associated with "soft" water) or alkalinity (generally connected with "hard" water) of water, we should see to it when propagating. For instance, *Cryptocoryne*, *Ambulia*, *Cabomba* and *Myriophyllum* like "soft" water. Water will be sufficiently acid if we use pure rainwater with a few oak leaves or a little peat. A little chalk or shell will give all the lime needed by

*A stem growing horizontally, rooting at the nodes. Usually referred to as a runner, as in strawberry plants and various aquatic subjects such as *Vallisneria*, *Sagittaria* and Amazon Sword Plants.



The Fanwort (*Cabomba*), a plant which prefers "soft" water. (Photo L. E. Perkins).

Really strongly-tufted plants (some sedges or the Flowering Rush *Butomus*) can be divided with forks placed back-to-back. Small single tufts are always best, and they will root easily if secured in good soil in shallow water at any time from later Summer to early Winter. Some very small plants with the same habit, e.g. Hairgrass (*Eleocharis*), should be treated likewise. When settled in, they will soon spread and provide a plentiful supply for a long time.

The grower should not become disheartened if little growth seems to result from late Summer propagation. The plants will be thoroughly well established before Spring, and will then make vigorous development. They bide their time. An interesting feature is the plants' sense of



Hairgrass (*Eleocharis acicularis*) which roots easily.

season. For example, the Frogbit makes little offshoot buds, called turions, in the Autumn. If these are taken and placed in a warm tank, even under good light, little or no progress will be secured until Spring comes in the ordinary way. Turions kept at 75 deg.F. in an indoor tank throughout the Winter will hardly outstrip those kept outside in a tank subject to freezing.

In brief, propagation of water plants consists of making use of the natural habit of the plant—with a little extra care in some cases, and a little artificial stimulation such as the forcing of Water-lily (or tropical *Najas*)

in a closed vessel. When in doubt, try slightly acid water. When cuttings are slow to root, keep their ends out of soil and in a dark place with moisture and air. Provided the tops are prevented from withering (e.g. under a jar), the roots can be made to "work for it" by drawing their moisture through damp bricks or sphagnum. At any rate this is true of many plants that are partly marginal. Truly flimsy aquatics should not be treated in this cavalier fashion, although there are surprising aspects of hardiness. *Riccia* will grow in the same pot as a cactus for months without apparent damage.



A mass of Frogbit (*Hydrocharis*) a floating plant which reproduces by forming turions in Autumn. These drop off and lie dormant until Springtime.

Breeding the Cherry Barb (*Barbus titteya*)

Three Breeding Methods and Discussion
on Each of their Respective Advantages

By Dr. F. N. Ghadially

WHILST breeding a few Cherry Barbs is almost as easy as breeding Zebra Fish (*Brachydanio rerio*) or Guppies, to produce them in fairly large numbers is a problem to tax the ingenuity of even the experienced aquarist. This, combined with the fact that it is an unusually attractive little Barb, makes it a fish worth breeding.

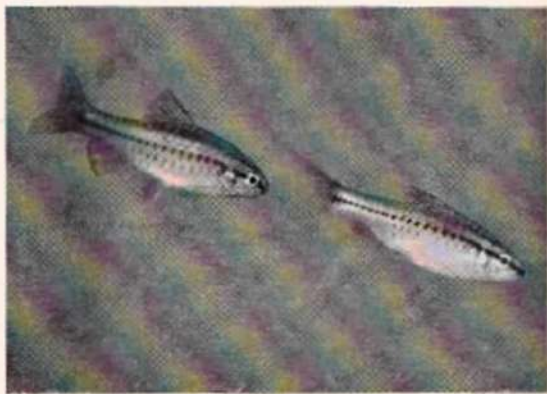
The Cherry Barb differs in many respects from the typical members of the Barb Genus. As is well known, the "typical" Barbs (e.g. Rosy, Tiger, etc.) are rather playful—at times almost boisterous—flashy fish that dash about the aquarium with exuberance, sometimes carried too far to the extent of nipping the fins of other inmates of the tank. Compared with these, the Cherry Barb is rather a shy, quiet, peaceful creature but fortunately not too retiring in its habits so that it can be relied upon to put on a good show in any tank. Though the metallic lustre of the Barb group is lacking in this species the deep red colour of the male and the paler colour of the female, with characteristic markings, make up adequately for the lack of metallic sheen.

Feeding Time Behaviour

Most Barbs have rather bad table manners, they make a series of mad dashes when food is placed in the aquarium and gulp it down with amazing rapidity. The commotion they create at feeding time often drives away more restrained fish who are apt to remain underfed if care is not exercised. The Cherry Barb does not behave in this manner, as a matter of fact they are rather finical feeders who will rather reluctantly accept dried food if nothing better is available. Even when livefood such as *Daphnia* is offered they never seem to feed with joy or gusto but go about casually picking up an odd *Daphnia* now and again. This is a point of some importance for, though with care these barbs can be reared in a community tank, the best results are obtained when they are given a tank to themselves and fed mainly on livefoods such as *Daphnia*, mosquito larvae, White Worms, *Tubifex*, etc. or fresh foods such as chopped maggots, Earthworms, etc. In the latter case the food should be very finely chopped as the fish have rather small mouths.

Sexes are very easily told apart. The fully grown male is smaller, less rotund and more brilliantly coloured than the female, which is of a yellowish-golden colour with a more conspicuous black horizontal band. The colour of the male varies from day to day and there also seems to be some difference according to the strain of fish one possesses. At least two distinct strains seem to be in circulation at the moment. In one the dark black line running horizontally across the fish is very well marked, the red colour is not clear, bright red but rather a brownish red and, when front lighting is used, a pale bluish to violet tinge is discernible in the upper half of the fish. The male of the other strain is almost uniformly translucent, clear, bright cherry red with only a very faint suggestion of a black horizontal stripe. These tend to be slightly plumper and larger than the former variety and have slightly larger, more elegant, fins. The latter, I think, is definitely the more attractive fish. Cherry Barbs, like most Barbs, grow and mature rather slowly and live for a very long time. I have successfully bred from a pair known to be about four years old. It is not worth trying to breed with fish under one year of age.

The main difficulty in breeding a fair number of these Barbs lies in the fact that they do not have one large spawning of hundreds of eggs over a short period of time (a few hours)



Photograph] [F. N. Ghadially
Male (left) and female Cherry Barb (*Barbus titteya*).

but that the spawning period is rather drawn out. Generally they appear to lay about 10 to 50 eggs and then next day, or a few days later, they lay another similar number. This goes on for some time at apparently erratic intervals. Then, for months on end, they do not spawn at all until once more the whole cycle is repeated. The following are the various methods I have used, some quite simple and others rather elaborate, requiring more attention on the part of the aquarist.

For the first method a pair of Cherry Barbs was separated and conditioned on livefoods. When the female appeared to be full of spawn the two fish were brought together in a base-heated breeding tank 18 x 10 x 10 in. This was a clean, scrubbed-out tank with a thin layer of boiled gravel at the bottom, maintained at a temperature of approximately 78 deg.F. An artificial spawning medium which I use for breeding most of the tropicals was employed. This consists of well-washed and boiled root of the willow tree (details of the willow root technique of fish culture were described in WATER LIFE, February-March, 1953 issue).

Eggs Difficult to See

This procedure was repeated with three different pairs. Altogether eight attempts at spawning were studied. Eggs are difficult to see, or perhaps it would be better to say find, as there appear to be so few of them; only on three occasions were one or two eggs sighted. They were of a fair size and quite clear. Consequently reliance was not placed on the discovery of eggs as indication of spawning but the slight alteration in the shape of the female was taken as a guide. Sometimes the pair spawned on the same day that they were put together but usually a day or two elapsed before spawning occurred.

As these fish are supposed to be avid egg eaters, about a dozen *Daphnia* were introduced to the tank. As these were eaten more were introduced but it is inadvisable to put a large number of *Daphnia* in a spawning tank for, if they are not eaten up and the fish spawn and young hatch out, they will later on compete with the fry for Infusoria and oxygen. Further, they will breed in the tank, the fry will be too small to eat them and there is no known practical way of sorting out one-week-old fry from hundreds of *Daphnia*.

With this method the maximum number of fry (counted at the end of three weeks) obtained from any single spawning was 52. This was exceptional, the average for the remainder worked out at 12 fry per spawning. The minimum number obtained from a spawning was three. Two failures giving no fry after an attempted spawning were omitted from these calculations. I have heard, however, from another aquarist that an exceptional spawning of approximately 250 fry has been obtained once under more or less similar circumstances. Anyway, if correct, this must be a very rare occurrence.

For the second method a friend of mine once had about 10 adult Cherry Barbs in a 24 x 12 x 12 in. well-planted tank. He was not bothered about breeding them. The tank was free from snails. This aquarist has a genuine phobia against snails. I have often had the impression that when he looks into his tanks he is not looking at his fish but rather hunting for snails! No effort is spared to pick out even the smallest, barely visible ones. On one occasion he succeeded, without any help such as removing the parents or adding Infusoria, etc., in breeding 24 young Cherry Barbs which reached adult size with the parents in this tank.

Modified Experiment

On investigating this phenomenon I thought it would be worth while duplicating this set-up with slight modifications. Once more an 18 x 10 x 10 in. tank was set up exactly as described in the first method. Two females and a male were introduced, fed liberally with livefood and, when these were not available, with very small amounts of fresh foods. Great care was taken to exclude snails, Planarians, Hydra and other similar egg-and-fry destroying creatures from the set-up. About a fortnight later fry were seen clinging to the glass; very small quantities of Infusoria were added, also a few *Daphnia* for the adult fish. Pollution can be prevented by adding *Daphnia* which are filter feeders and tend to clear the water of bacteria. In time the adults eat up the *Daphnia*, so no complications, as described previously, arise. Thus there was never any need to siphon off and replace any water.

When the young had grown somewhat, newly-hatched Brine Shrimps were added to the diet. Mikro-worms were given very sparingly or not at all for fear they might get trapped in the willow root and pollute the water. As time went on new broods appeared at irregular intervals. At the end of about two months the tank was full of young fry and the adults were transferred to another tank similarly set up to carry on breeding. Two such trios were in operation and it was found that an average of about 120 fry were obtained in each tank at the end of approximately two to three months. After this period fry suddenly ceased to appear for about five months, when the process started again.

Minimising Egg-eating

It is believed by most aquarists that Cherry Barbs are avid egg- and fry-eaters. It would be difficult to prove or disprove such a statement but one would think that they could not be very bad in this respect or the second method described would not have worked. However, from numerous bitter experiences, I now find it difficult to trust almost any fish with the care of its eggs or fry, so a third idea was tried out to see if more fry would be obtained when the period of contact between adults and fry was diminished. A long narrow tank, divided into five compartments by glass partitions, was employed. Each compartment was set up as the tanks described previously. The parent fish were placed in the end compartment. When they had spawned the partition was lifted and the fish were allowed to swim into the next compartment and the glass dropped into position again. After a few days they spawned in the second compartment and were then moved on to the next compartment and so on to the end compartment when the fish were removed and also all the glass partitions giving the youngsters a free run of the tank. Thus the eggs, and particularly the fry, are not left to the mercy of the parents. By this method over 200 were once obtained but as a rule

the results are not much better than those obtained by the second method because of the difficulty of knowing each time there has been a spawning and moving the adults on to the next compartment.

In conclusion I would like to say that if I were to breed Cherry Barbs again I would use the second method for it does not involve much work and gives fairly good results. A more conscientious aquarist would perhaps do better with the third method. The first one is good enough to produce a few fish for the man with a small set-up.

Simple to Rear

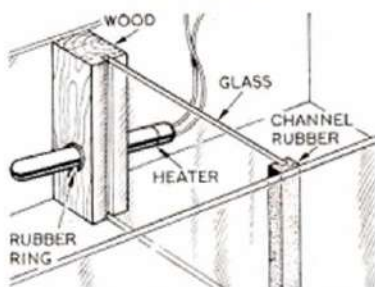
Rearing the youngsters is simplicity itself and follows the usual pattern. Infusoria are needed for the first few days. The young are rather small as compared with other Barb youngsters but at the end of a week they should be able to take newly-hatched Brine Shrimps. After that they may be fed on Mikro-worms, fine dried foods, etc. followed, later, by *Daphnia*, *Tubifex*, chopped maggots and similar food. At a very early age (three weeks) the dark horizontal band becomes plainly visible and the fins take on a red hue. Caudal fin defects are quite commonly seen just as in Tiger Barbs though they are not usually as severe. Whether conditions of environment, genetic factors, or both are involved in the development of these defects has not yet been satisfactorily answered. So if you find large numbers of fry with poor tails try breeding with fish obtained from a different source and keep the water in which they reside crystal clear and free from pollution at all times.

Like all Barb fry, the Cherry Barb is a slow grower, but it is worthy of the skill and care required to breed it.

Readers' Hints and Tips

Heating a Divided Tank

AQUARISTS who wish to divide a tropical tank for any purpose but who may not have a heater suitable for burying under the compost can ensure heating both sides of the partition simple and safely. Take a piece of wood the same length as the depth of the tank, approximately 12 in. wide by $\frac{3}{4}$ in. thick. Cut a groove in one edge to take the thickness of glass you are going to use as the partition. Two inches from the bottom of the wood cut a round hole, slightly larger in diameter than the heater to be used. This is made larger to allow the wood to swell when immersed without cracking



the heater glass. Place the wood at the back of the tank and measure, for the size of the glass, from the back of the slot to the front of the tank. Put the heater through the hole in the wood and then place a rubber ring on each side of the hole to hold the heater firm. Next, put a piece of channel rubber on the front edge of the dividing glass. This gives you a tank that is divided with the same temperature on both sides.—(W. Blackburn, Smithies, Barnsley, Yorks.)

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

Encouraging Beginners

Will Novice Classes at Shows
Solve the Problem?

HERE is the final selection of the numerous contributions received on the suggestion that separate classes for novices and champions should be staged at aquaria shows.

Mr. E. R. Blunsden (Bristol A.S. pioneer and well-known for his work on the Bristol Shubunkin standard) writes:—"I agree wholeheartedly in principle that something should be done to encourage the thousands of new recruits to the hobby of fishkeeping. At the present time they are not having a square deal at open shows. The difficulties are many but not insurmountable. At this stage, the less we talk about champions the better. In the dog world it is the exhibit which becomes a champion, not the exhibitor. If I purchase a puppy which ultimately gains a premier award, I am not debarred from showing another puppy or dog bred by myself in other than open classes. This system is hardly workable in the case of fish unless they are registered, and this would take years to organise."

On the other hand, we must be careful lest we may discourage rather than encourage a beginner. I can state a fairly recent case in which an aquarist decided to specialise in Shubunkins. He purchased a young fish which later gained the premier award in a large open class. Now, is that beginner to be penalised and not allowed to enter fish of his own breeding in novice classes? Probably, we shall eventually be forced to agree that these unfortunate exceptions cannot be avoided. A rule could be made that all fish gaining awards in novice classes should henceforth be shown in open classes only, but this would not shut out the expert who probably has other winners growing on. I am in favour of penalising novices according to the size of classes; for example, all winners in large classes, 1st and 2nd prizewinners in medium classes and 1st prizewinners only in small classes would thereafter be eligible for open classes only. I have in mind classes of approximately 50, 20 and 4 entries respectively. All varieties should be considered separately since the technique in breeding, rearing and picking out potential winners varies greatly."

Mr. A. Boarder (a successful breeder and exhibitor of Fantails and a recognised Goldfish judge who lives at Ruislip) compares the position in this hobby with that obtaining in birdkeeping circles:—"The question of champion and novice classes at shows appears to be causing considerable interest. There is nothing new in this idea as it has been in general use in the cage bird world for many years. I myself won a novice cup for Norwich canaries and more than three firsts to become a champion in 1923. Some aquarist clubs already stage novice and champion classes at their own table shows. The idea is a good one if it can be carried out, but is this the time to do it at open shows? Very few shows can supply enough classes for the recognised varieties of Fancy Goldfish and more societies each year are cutting out individual fish classes. Until the happy day arrives when most large shows can offer classes for the main types of fish I fail to see how they can be expected to provide novice as well as champion classes. The system could be worked as it is in other spheres of showing,

and the rule that three firsts in novice classes qualify for championship status works fairly well.

Any breeder of a particular strain exhibits his fishes so that he can get an independent judge to place the fish, but after a time he becomes proficient at the job so that he is probably in as good a position as anyone else to assess their quality himself, and the necessity for showing disappears. The idea has been attempted in a way by certain exhibitions asking for one entry per club; this then virtually becomes a championship class. Once a champion always a champion is the accepted ruling that cannot be altered."

Mr. H. A. Giles (President and former secretary of Southend and Leigh A.S.) summarises the views of his society:—"The subject was talked over thoroughly and it was felt that the scheme was impracticable so far as our shows were concerned. There is the ever-present difficulty of making our existing classes fill up and we could not split them up further on economical grounds. In the case of larger shows such as National events, however, we feel that a scheme of this nature could be introduced, probably with advantage."

Mr. G. S. O. Saunders (secretary of Croydon A.S. for a number of years and an experienced show organiser) puts forward a number of points that he thinks must be considered before any scheme is introduced. He writes:—"There can be no doubt that the introduction, generally, of both novice and champion classes would be advantageous at our open shows just as it has been successful in other not dissimilar hobbies. However, such grading, successful in other spheres, may not be accomplished easily where fish shows are concerned. Croydon A.S. scheduled classes for professionals and amateurs as far back as 1948. To exalt an exhibitor to the champion grade has its disadvantages for, with his skill, plus luck and a little extra spare time, he may achieve that status one year but for the next two or more seasons may not approach it. That is a fairly common experience. In the dog world, the animal exhibited, not the exhibitor, is the champion provided he has gained the necessary preliminary awards. Unfortunately, there is no organisation in the aquaria world akin to the Kennel Club and so we cannot register a fish before showing with it or have issued a certified pedigree certificate. If an exhibitor were adjudged a champion (breeder) then a defined term of limited duration during which he retained that grade should be determined."

Assuming that instead of one open class there are in future two, one for 'champions' and the other for 'novices' (or whatever terminology may be agreed upon), the exhibitor should have the option of choosing the class in which he shows; the entrance fee and the value of the award in the 'champion' class should be appreciably higher; the 'champion' award should be of a fixed minimum value and with it should go a plaque, certificate or the like, of copyright design and obtained from an approved source such as the F.B.A.S. Champion exhibits would then be judged only by acknowledged top flight judges and there should be the proviso that all fish entered in a champion class must have previously gained two first prizes in a novice class. Making the exhibitor a champion instead of the exhibit is putting the cart before the horse."

Mr. C. J. Grant (secretary of Coventry P. & A.S.) asks who is on show, the exhibit or the exhibitor, when considering the terms "champion" and "novice", and says that, so far as encouragement is concerned, if a fish that comes first on one occasion is to be beaten it must come up against a better specimen and he wonders what greater incentive is needed by exhibitors. He goes on:—"Good fishes entered at shows often miss the first prize by a few points on deportment, the extra points going to specimens that are accustomed to being transported all over the country to the various shows. The moral is to show as widely as possible and if that is not practicable to make more use of table shows,

getting the fish on to the show bench as often as possible. What is lacking at our open shows is not a higher status but a sufficient number of classes in the breeders' section. This section demands genuine knowledge and skill on the part of the exhibitor. Furnished aquaria classes deserve better recognition than they get at present and show committees should provide better facilities for competitors. The prime importance of shows is to interest the visitors who by paying for admission help to further the hobby. That being so every encouragement should be given to ensure that the best fishes we possess are on view."

Mr. G. F. Elverson (Show secretary of Portsmouth A.C.) writes:—"I cannot understand why novice and champion classes are not provided at open shows. If the promoters are unable to enlarge their classification to any extent, the least they could do would be to include two novice classes, one for tropical and the other for coldwater exhibits. Portsmouth A.C. had two such classes in 1952 and 1953. They were well patronised. No difficulties arose and the satisfactory entry meant no extra expense to the club. So small a section is not the ideal arrangement but at least the novice has a chance to exhibit against others of his own standard, knowing that the winner will not be exhibiting in that class next year. The novice is not barred from exhibiting in the open classes."

We should have a higher grade or status for the successful exhibitors, accepted on a national basis and recognised by the F.B.A.S. or any other competent organisation. Portsmouth A.C. considers that there should be a scheme on the following lines: (a) Beginners' classes, open to those exhibiting for the first time at any open show. (b) Novices' classes, open to exhibitors who have not won a first prize at any open show. (c) Champions' classes open to all exhibitors,

novices and beginners being eligible to compete in this section if they wish. The more successful champion exhibitor should be able to get further recognition by a star scheme (not to be confused with the present points star scheme of the F.B.A.S.—Ed.) under which the appropriate national organisation would present (1) a Bronze Star diploma to winners of six first prizes at any open shows (at least two different judges must have made the awards); (2) a Silver Star diploma to holders of three Bronze Star diplomas, i.e., 18 open show first prize cards; (3) Gold Star diploma to holders of three Silver Star diplomas, i.e., 54 open show first prize cards. The first prize could be obtained over a period of years and with such an incentive before them exhibitors would be encouraged to enter at events away from their own club's open shows.

It does seem that a number of first prizes go to the same exhibitors each year, to the discouragement of the unfortunate remainder. This tendency will decrease when we have standards for all tropical fishes. With such standards in being, the ideal would be to have, in the champions' section, separate classes for every species of fish so that, for example, Zebras would compete against Zebras and Neons against Neons. At present, exhibitors are disappointed at their fish being beaten by a rare variety, which otherwise cannot be said to be superior. Resentment is also felt where a good Black Widow beats a good Glowlight, yet, in separate classes, each would gain a red card. To avoid these clashes big classifications would be necessary but their adoption would be the only fair way."

A summary of the opinions put forward will appear in our next issue, leaving the subject open for subsequent consideration by the Federation of British Aquatic Societies and contemporary organisations.

No Compromise

Capt. L. C. Betts Reiterates His Views on Rules and Standards and Reviews our Last Issue

HOW true the Editorial is, in the August, 1954, issue, when it says that the average society member does not want to sit for hours debating this rule and that. My own views are that rules are not only made to be debated but also to be evaded, quoted, misquoted, used against the officers (particularly the Chairman) and in the end to break the Society up! There is only one rule worthwhile in an Aquatic Society and that is the one which says, in effect, members guilty of causing trouble shall be asked to resign. My fish cannot read and show scant regard for byelaws and standards.

Mention of Standards, I read on page 168 that there are few fanciers in Austria engaged in line breeding Guppies. They prefer to use the aquarium to observe Nature and its Laws. I am therefore surprised to read that this does not stop them drawing up standards for the Guppy. This sort of thing seems to be happening in Britain with the Goldfish. The movement to standardise Standards seems to be to come more from the general practitioner than the specialist and the case for general agreement has yet to be made out. The only way standards become real, as distinct from acceptable, is when the genuine breeders accept them. I am, therefore, surprised when my friend Norman Perkins writes "... whatever compromise is reached ..." (page 174). I find his advocacy of "compromise" rather surprising for a man with an appreciation for scientific truth. Science

never compromises. Compromise pre-supposes a *quid pro quo* and I have yet to meet the serious breeder of fancy Goldfish who will give way one inch on some physical factor which he knows is not feasible. The Goldfish section of the Hobby has some of the oldest (in age) of the aquarium fish-breeders and they are notoriously obstinate. So far as the Goldfish Society is concerned they will accept only those standards which are based on correct genetical and biological factors.

Rodney Jonklaas (page 181) unwittingly serves the cause of the Goldfish in his "Raising Goldfish under Tropical Conditions", although not, it would appear, as it was intended. Having said that temperatures in Ceylon seldom drop below 75 deg.F. and often reach 100 deg.F., he goes on "fry are 3 inch in length in three months ... at 4/5 months old the precocious ones breed ... Goldfish do not live long in Ceylon ... Moors will not readily breed ... Moors are delicate."

The reader will notice how heat increases the rate of metabolism of the fish and produces a shorter life, too early a maturity and a lack of true vigour which reflects seriously in the ability of the fish to reproduce itself. When Mr. Jonklaas says that Moors in particular are subject to fungal attacks, he must really mean that it is more readily observable since it is against a black background. He may be interested to know that my oldest and largest fish is a Moor. He was in "hot water" at the last WATER LIFE Show and on his first day back in his tank he had an inch of ice over him. Yet did not show any signs of distress. Does that not sound as if he is very delicate? My interpretation of the conclusions this contributor reached is that as water increases in temperature over 60 deg.F., so it progressively gives off its oxygen. Thus a situation is created in which the breathing becomes accelerated and the demand for oxygen is only partially met. This state of affairs cannot last long and the fish becomes debilitated and the normal hazards of living produce an early death. Varieties such as the Lionhead and

(Continued on page 239)

New Dwarf Cichlid

Apistogramma reitzigi

By R. W. Andrews

APISTOGRAMMA REITZIGI is apparently a new aquarium Dwarf Cichlid to British aquarists but it was first introduced into Germany around 1937 and there it soon became established as a popular favourite.

Some time ago a local fish dealer gave me a pair of young adult specimens for observation. The pair, on being placed alone in a tank with a well-planted background, immediately disappeared into the concealing aquatic plants where they remained hidden for several days, not even coming out to feed. As a result the old trick of placing some lively male Guppies in the tank was resorted to with almost instantaneous success, for the *A. reitzigi*, seeing the Guppies safely chasing and feeding in the open frontal area, soon came out to look around.

Rapid Pattern Change

With the *A. reitzigi* now settled down it was possible to observe their normal coloration. The back was olive-yellow merging into the lemon of the belly. At times a prominent wide black bar showed along the lateral line, this being crossed vertically by a series of similarly-coloured bars. The whole pattern of bars can appear and disappear with extreme rapidity. The head is lemon with irregular black markings. A curved black line runs through the eye and across gill cover—this particular mark remaining permanently on the female. Fintage is of a yellowish tinge, excepting the pectorals, which are clear of any colour. The male's dorsal ends in a long point, so typical of many male Cichlids, and, with the anal fin, shows a black fringe along the top and bottom edges, respectively. Only the anal of the female is so marked but, in addition, the female shows a well-defined jet black front edge to dorsal and pelvics. From reports, this species is obviously an example of occasional specimens showing slight colour variations from an accepted general standard. The female is considerably smaller in size than the male.

My pair, although of slow growth, soon came into splendid condition on a full livefood diet of *Tubifex*, White Worms and *Daphnia*. When the male was just over 1½ in. in body length, I first noticed signs of a possible spawning, for his whole body and finnage had become suffused with a blue-green iridescence and he commenced to ardently court the female. This procedure consisted chiefly of approaching the female with finnage spread stiff and erect, then, when about 3 in. away, he would turn completely over on to his side, continuing the approach by slowly drifting forward with eyes fixed unswervingly upon his mate. The female fish, in turn, was watching intently until the male was quite close, then suddenly she dashed away into the plants with the male in close pursuit.

Female's Unusual Behaviour

This courtship activity lasted for several days, then one morning after dropping food in the tank, I noticed that only the male was feeding and on inspection I observed that the female was lying close down to the sand and against the base of a leafy *Nuphar*. She maintained this same position almost constantly for the next six days, only occasionally darting forward at any too-inquisitive Guppy. Not once did I observe her taking food during this period. The male also was showing aggression towards the Guppies, though he displayed no interest in the female *A. reitzigi*. In fact, on the few occasions I saw him approach the female's end of the tank, he was violently driven away. Then came a climax

for on the afternoon of the seventh day I had a thrilling experience, seeing the female, completely surrounded by a cloud of free-swimming fry, emerge from the screening plants but, unfortunately, I was now in a quandary for that same afternoon I was going away for three days. However, I inspected my Infusoria cultures and, sorting out one with the largest size Infusorians, I poured as much of the culture in the tank as possible up to safety limits from fouling. Immediately I returned from my visit I went to the *A. reitzigi* tank and, to my relief, again saw the female still closely attended by her shoal of babies. As the fry appeared to be of a fair size, I started adding Mikro-worms to the infusoria. Seven days later only Mikro was being given.

For fourteen days from free-swimming stage the fry stayed close to the female then, for no apparent reason, approximately half the number of fry deserted the female and commenced a close attendance on the male, who quite obviously took his newly-acquired parental responsibility very seriously. Never once did I observe him attack any of the fry, even when they started nibbling at his fins and body. His only reaction to this obvious irritation was to quiver and dart a short distance away. Both parents continued their own respective ways, each with its own section of the family always in attendance, until the fry were about 21 days old. From then on the fry started to become individualists and spread to all areas of the tank. They had by this time, developed the species' deepish body shape and showed an overall coloration of light brown with yellow vertical bars.

Average Temperature of 75 deg.F.

Tank temperature throughout the described period averaged 75 deg.F. It may be of interest to add that this species' natural habitat is the La Plata area of South America.

In Dwarf Cichlid spawnings it is usually advisable to remove the male after a spawning has taken place, but there are exceptions to the general standard of male behaviour, as for instance in this report where the male proved an exemplary parent.

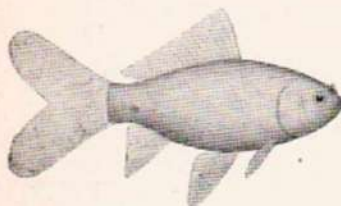
No Compromise (continued from page 238)

Oranda will be particularly susceptible to these conditions and I cannot see how they will ever be bred in numbers under sub-tropical conditions. The hard inflexible gill plate throws a burden of living on the Lionhead which only large volumes of cool well aerated water will alleviate although it always accepts its handicap with a cheerful philosophy which humans could well emulate.

Finally, to Mr. Thompson's spirited defence of the Singletail. With 200 miles intervening between him and his little group of enthusiasts in Lancashire and the parent body (the Goldfish Society of Great Britain) he has proved to his own satisfaction that all varieties of Goldfish belong to one of three groups, i.e., the shiny scale, the not so shiny scale and the transparent scale. Standards for the last two groups demand brightly coloured fish. Being a logical minded man, he fails to appreciate why the shiny scaled groups should be self coloured fishes (vide F.B.A.S. standard "a rich warm red"). Further, he may feel that as the shiny scaled fishes are necessary to produce 100 per cent not so shiny scaled, plenty of colours in the former may well produce plenty of colours in the latter. What use is a standard if it has no direct bearing on the breeding?

Specialist Society's Approach to Goldfish Standards

R. J. Affleck, M.Sc., Goldfish Society's
for a Scientific Foundation



*Singletail
(Monourleptus)
Characteristics of
this variety are
intensity of colour
and carriage of the
caudal fin.*

WHEN the members and committee of the Goldfish Society of Great Britain first began considering standards they were faced with a very confused situation, the main points of which may be summarised thus:—

1. The old standards recognised two groups, called Scaled and Calico, and many aquarists were attempting to produce strains of true-breeding Calicos; a few stated that they were doing so.
2. The existing drawings showed characters which could not be achieved with real fish, e.g., body of Veiltail and Fantail, tail fin of Shubunkin, etc.
3. The descriptions of the standards lacked precision and were therefore inadequate for a specialist society.
4. It was possible to breed some of the standard varieties as "throw-out" from the others, e.g., Telescopic Fantails from Telescopic Veiltails, etc. This was because "intermediate characters" were recognised.
5. There was no ruling on exhibiting large fish only, with the result that small specimens which, although they had a good appearance, would never make the grade when they were well grown, were being given awards and, what is much more unfortunate, were being used for breeding.
6. The colour of varieties, particularly the Shubunkin, was being considered before shape with the result that many deep-bodied fishes were being used for breeding because they produced colourful offspring.
7. Many breeders who had, for example, one good Veiltail would not wait until they had another good specimen but would mate it with a Fantail in the hope of getting "some of each". Even if they all turned out to be Fantails he would be able to sell and exhibit them.
8. Calicos were being bred to the exclusion of the Scaled fish and most strains had been so crossbred that if one bought a pair there was no knowing what the offspring would be. One member said that we really wanted new fish rather than new standards.

After these points had been considered in detail it became apparent that there were three courses open to us: (a) Not to do anything at all. (b) Tackle the fundamental problems from the beginning. (c) Compromise between (a) and (b). As the society boasts that it has a scientific outlook, (b) was the only course open.

How the Problems Were Solved

1. The Groups. The names of two groups recognised are confusing. In the "scaled" group all the scales are conspicuous and shiny but as all Goldfish have scales the name did not appear to be apt. The meaning of the term "Calico" is slightly obscure but the name appears to refer to a piece of material printed in bright colours. Such a classification is obviously nonsense as one term refers to scales and the other to colour, whilst, when it is realised that the true distinction between the groups has nothing to do with

either scales or colour, the position becomes even more ludicrous.

As the real differences between the groups depend on the amount of reflecting tissue (or shine), nomenclature emphasising this fact was chosen. Metallic was applied to fish with the maximum amount of shine; Nacreous, where the reflecting tissue was reduced and parts of the fish had a mother-of-pearl (nacreous) shine; and Matt where the general surface of the fish was dull. Any variety, no matter what its shape, could appear Metallic, Nacreous or Matt.

It is important to realise that colour has nothing to do with the distinctions between the groups, e.g., a Metallic fish may be self orange (orange all over) but so also may Nacreous and Matt fish.

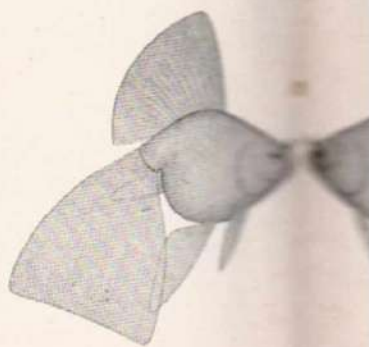
The Shubunkin appears to some aquarists, to be a special fish but in reality it is merely a Nacreous one with a particular shape. The Metallic and Matt forms have not been recognised in the Bristol type but in the London type the coloured Metallic form is nothing other than the Common Goldfish.

2. Standard Drawings. It would take many pages to describe the "impossible" features we found in existing standards but two or three examples will serve to illustrate the general adverse criticisms. The body of a standard Veiltail (head, trunk and tail but not the fins) are supposed to be as round as possible and the profile of the head merge into that of the trunk. When real fish are examined, however, it soon becomes apparent that the head always projects from the remainder of the body and detailed studies of skeletons show why the so-called rounded head and body cannot be achieved. The G.S.G.B. standard shows what can be achieved although breeding a very good fish is by no means easy and a 90-point specimen is still a great rarity.

Impossible to Produce

On paper, the Bristol Shubunkin has a very good appearance but such a fish cannot be produced. In this connection, it is interesting to read the opinion expressed by Mr. B. J. Upchurch, who is renowned as a breeder of Shubunkins. Writing in *WATER LIFE*, p.131, June-July 1952, he states: "After exhibiting at and visiting a number of shows in different parts of the country I do not remember having seen a specimen worth more than 65 points. . . . In fact, after selective line-breeding for a number of years I find it is next to impossible to produce anything near to the types of fishes laid down in the original B.A.A. standards or the more recent F.B.A.S. book". Mr. Upchurch has won most of the premier awards in the country, including Bristol, with his Shubunkins.

In the standard for the Bristol Shubunkin, the feature which calls for criticism is the shape of the tail fin. It may be an excellent shape artistically but for a fish it is an impossibility. The facts have been illustrated by myself, Mr. C. E. C. Cole and others in *WATER LIFE* and elsewhere. The diagram on page 320, *WATER LIFE* December, 1953



Standards

Society's President, States the Case
which Appeals to the Serious Breeder

shows the general arrangement of the rays in a tail fin. Every ray is a double structure (the two halves lying side by side) and consists of pairs of small bones lying end to end supported by connective tissue and muscles.

As one approaches the extremities of the fin, the rays become divided as shown. In a wild-type fish with its short tail the rays are relatively straight and the same is true of a young fancy fish which will eventually have a long tail fin. As the upper margin of the fin is supported by one ray which is stouter than the others, it follows that this margin must be straight except near the extremity where other rays help to form the contour. In the case of the young fish, however, as new units are added to the extremities, there comes a time when the rays can no longer support the enlarged fin in its normal position and they bend under the strain. In the extreme cases the whole fin droops down as in a Veiltail.

Now let us look at the Bristol standard. The upper margin of the fin consists of a large 'S' bend. Even allowing for the small rays which fill in the corner between the caudal peduncle and the top of the fin, the large upper ray would have to bend upwards and then sag in order to produce the shape depicted—truly a remarkably deformed ray.

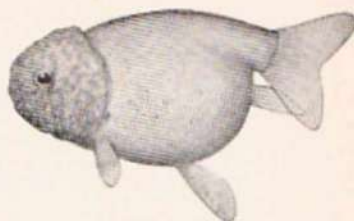
Examination of Tail Fins

Novices are sometimes confused when examining tail fins. A fin, in which a state of partial collapse has occurred (the downward droop), may somewhat resemble the standard shape momentarily when it is being moved vigorously, but a fin in this state could hardly be said to represent the ideal. There is also no doubt whatever that no tail fin of the relative shape and size depicted on the diagram could be held erect by an adult fish (body size 3½ in. or more) except for a moment or two when the fish was swimming vigorously.

In attempting to produce fish to the Bristol standard, breeders have naturally selected for large well-developed tail fins. In many cases the fish have had a fairly pleasing shape when young (i.e., up to 2½ in.) but at 3 in. they become "draggletails" and, what is of more importance, the breeder has a strain of "draggletails". In a recent premier exhibition, all but two of the Bristol Shubunkins had fins in a state of partial collapse—the two were undeveloped fish.

Before the G.S.G.B. standards were considered, the bones, muscles, etc. of a large number of fish were examined in order to ascertain that the features being included were possible to achieve. In the last issue of WATER LIFE (p.173 including photograph) mention was made of one particular fish. I can remember this specimen and was always struck by its vitality, even on the show bench, where it would swim very actively from the beginning to the end of the show. This appears to be the one outstanding fish (seen in the last seven years) which is said to be a Bristol Shubunkin, but a comparison of the photograph with the Bristol standard shows that the fish has little in common with the drawing. The fish is a relatively short-bodied

Bramblehead
(Batocephalus)
Characteristic of
this variety is the
bramble appearance
of the head.



specimen and not even with a great stretch of imagination can the tail fin be said to resemble that of the standard. It does, however, illustrate one point very well—the upper margin of a fin, not in a state of collapse, is relatively straight. The tail fin of this fish is carried very well but it should be remembered that short-bodied specimens usually carry a large fin better than a slim, streamlined fish.

The merits of the G.S.G.B. standards are that it is possible to achieve the features depicted (although the task is by no means easy) and that by attempting to reach a real goal we are improving and maintaining our strains and not ruining them as we would be if attempting to breed fish with "impossible" features.

Precision in Description

To write a specification saying that a fin is "large" is valueless unless one says what is meant by "large". To describe the length of a caudal fin as half the length of body is also valueless unless you state how the length is to be measured. Figs. 1 and 2 (on page 242) show four measurements which could be taken from one fish depending on how the fin was being carried at the time. Fig. 3 shows the measurement as made by the G.S.G.B., which is not influenced at all by the position of the fin. Methods of making measurements and all technical terms used are described or defined in the G.S.G.B. Standards publication.

3. Deciding on the varieties which it would recognise, took the committee and members many months. The main points considered were:—

- (a) The varieties eventually recognised would be fancy fish; it was felt that the Common Goldfish could look after itself.
(b) Ignoring groups and colours, the characters found in British Goldfish at the time were:—

Body Long/slim. Short/deep.

Fins Extremities rounded/extremities pointed.

Caudal and anal divided/caudal and anal not divided.

Dorsal absent/dorsal present.

Eyes Protruding/not protruding.

Head Bramble-like growth/no bramble-like growth.

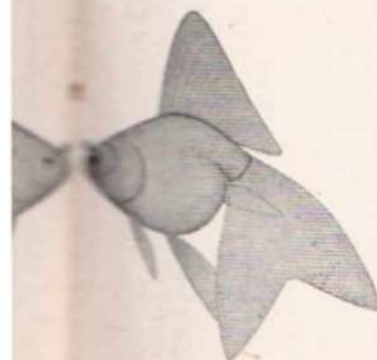
(c) With these characters and the three groups it would be possible to evolve 192 different varieties. If intermediate characters were considered (e.g. Fantail, intermediate body, etc.) the number of possible varieties would be increased enormously.

It was finally decided to include all the characters listed in the smallest number of varieties possible without overloading any one. Eventually the idea of basic varieties was born. The illustration of the Globe-eyeshow how the characters are allocated. What is of fundamental importance is that it is absolutely impossible to produce a fish, even slightly resembling one standard, as a throw-out by mating any of the others. What of the new characters—Pearl Scales, Bubble-eye, etc? No standards will be considered until large numbers of fish have been bred and some knowledge of the inheritance and stability of these characters is known.

4. As a final method of eliminating undesirable fish the G.S.G.B. has the type test under which any specimen not

(Continued next Page)

Left: Bristol Standard
Classification of the variety
and its characteristics
as shown in the
drawing.
Right: Globe-eyeshow
how the characters
are allocated
to the standard
varieties.



Confusion also exists because of the different names given by the author to colour variations. What does the author intend to convey by the name Gold Guppy? Is it the same as the British Gold variety (known in the U.S.A. as the Blond Guppy) or is it more like Goodrich's Golden which is the equivalent of the British Goldfaced?

The suggestion that infusoria must be fed to young Guppies is unnecessary. The youngsters will take small livefood such as Brine Shrimps and fine dry foods from the day that they are born. To say that well-fed Guppies will not eat their young is not true. Some females eat their offspring even when they are kept with a continually replenished supply of Daphnia.

There is criticism of the standards adopted by our Federation of Guppy Breeders' Societies but I maintain the author has misunderstood the intentions of those of us who helped to draw them up. There are standards which breeders are attempting to reach. When they do, the standards will be advanced. One thing about which I am certain is that none would seriously want to see no limit to the size of the Guppy. Why did Mr. Whitney omit to publish our standards for Scarftails and Veiltails?

Kenton, Middx.

W. G. PHILLIPS

"All About Guppies" by Leon F. Whitney, D.V.M. was reviewed in the February 1954 issue. His critic is one of the pioneer Guppy breeders of this country who has done much to improve a number of strains. More recently he has been concentrating on developing one in which the males have jet black pectoral fins. He calls them Paddle-fins, a name which is self-explanatory—Ed.)

FURNISHED AQUARIA AT SHOWS

It was with extreme interest that I read the letter in the August issue of WATER LIFE by Mr. W. S. Mellish, chairman of Willesden A.C., on the above subject. I agree that there has been a falling off of entries in the furnished aquaria classes.

From experience I know how difficult it is to coerce or persuade members to support this section. The trouble appears to be due to more than one factor.

A number of competitors have only one good set-up aquaria at home and their best plants are kept in it. The thought of disturbing it only to reset it again after the show is over sometimes deters them from entering. Such treatment does tend to set plant life back. The question first raised some time ago in your pages concerning a novice's chances against experienced competitors who have won prizes over a number of years crops up here. Lack of transport to convey compost, rock, plants and fish may apply in the case of Mr. Mellish, but my society have always offered compost and rock of good quality for use by competitors, so that only fish and plants in the way of furnishings need be carried. Even so entries have been few.

It is from this point that I disagree with Mr. Mellish. He says: "One must be an artist". Of course, he should, in the sense of creating a picture that will be pleasing to the eye, or so designed as to raise favourable comment on its style or originality. The F.B.A.S. system of awarding points for quality of plants and general design is, in my opinion, very fair and, I might add, a far more accurate one than some used prior to the present methods evolved by the F.B.A.S. Judges and Standards Committee.

If the writer will examine his letter he will find that he is arguing against himself. As a judge examining entries in a furnished aquaria class, one of the first things one notices is the appeal it makes. This is more often than not impressed upon the judge's mind by the very beauty of the plant life used, together with the pleasing effect of the general assembly. Good plants can make or mar an aquarium. It is not the man with the longest purse who grows the finest plants. The exhibitor who exercises care and patience can grow better plants than his neighbour, rich or poor, if he so desires. Plants form an important part of the set-up tank and can earn up to a quarter of the total points.

If an exhibitor grows his own plants, it will take longer than 28 days to produce good specimens. Therefore, this is a fair margin, because it allows the competitor an opportunity to purchase plants before the event, which in competitions of this nature is usually announced months ahead. You could buy the finest plants in the world and still have the worst ones within

seven days if you did not know how to tend them. With regard to variety, the points are narrowed down so that four good specimens could score more points for their quality than 18 run ones in poor condition.

The question of design is part-and-parcel of the general set-up, and, with plants put in the right places and of the correct type, the competitor is half-way home. The rock design and formation is only subsidiary to the whole.

I am afraid I cannot agree with the writer's views either as a judge or as one who sells plants. An athlete trains to win an event by long preparation. An aquarist should plan and prepare for his event and grow good quality plants. The rest is a matter of pitting his skill against the other competitors. As for "scrapping the whole daft system" that seems to indicate your correspondent's attitude generally. The code of rules that have been prepared were not the work of a few hurried moments but the result of years of study and much discussion and deliberation.

We have been talking about aquatic plants. I have refrained from mentioning fish as these are judged on the standards already set out for them.

W. J. CHRISTIAN

PRECOCIOUS PEARLS

SIR,—As one who has bred and exhibited fish for a number of years and has gained over 150 awards, I read with interest the contribution by Mr. A. J. Holloway, in the August, 1954, issue, to the discussion on separate categories for champions and novices. I agree with what he says and think the scheme a fine one.

It is, however, easy to kill the interest of novices in exhibiting in a number of ways and I quote one example. At a recent open exhibition I competed in the Tropical Breeders' Egg-layer Class where the judge gave a prize to a team of six first-class Pearl Gouramies which appeared to be in full breeding condition.

and yet according to the data given in the catalogue were only six months old. Was the date correct or was there a printer's mistake? I know that the fish would have been eligible had they been bred as far back as twelve months before the show but they were stated to be only six months old and if that was true their development was extraordinary.

From my experience, it is unusual to get such rapid growth. For example, I have kept three *Trichogaster leeri* in a 38 x 20 x 15 in. tank, in running water, for twenty months. When I bought them they were 1½ in. long. Now, after careful treatment, they are 3½ in. long and two of them have just come into suitable condition to be put down for breeding. This is in keeping with the information contained in books on fish breeding which tells us that pairs of Pearl Gouramies should be from eighteen months to two years old. If these fish can be brought into condition and grown up to a reasonable size in six months how is it done and why are there so few such specimens about? I would like to hear from other breeders who have experience with these fish.

Harold Hill,
Romford, Essex.

W. E. GAWLER

CAR BULBS FOR TANK LIGHTING

SIR,—I feel that a few comments would not be out of place concerning the efficiency of low voltage series lighting, and also to dispel any false sense of security as a result of the article by Mr. J. E. Edwards in the June, 1954, issue of WATER LIFE. To start with, 24 watts of low voltage lighting is, for all practical purposes, equivalent to a 25 watt mains lamp. The low voltage lamp should have an increased efficiency of up to 25 per cent, but this is offset by the virtual point source filament which gives hard and sharp shadows and a rapid diminution of light towards the sides and corners of the tank. By no stretch of imagination can one compare a 24 watts low voltage lamp to a 40 watts, much less a 60 watts, mains lamp.

I must emphasise that the foregoing remarks apply strictly to the light output of the lamps and does not take into account their colour. It is possible that the spectrum emitted by low voltage lamps is more suitable for plant growing than that given by mains lamps. This is a matter which can only be proved over a period.



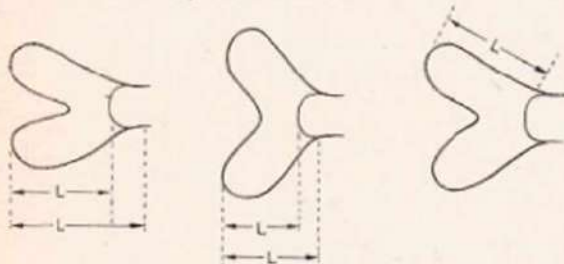
A well-balanced prizewinning furnished aquarium, containing a Veiltail Goldfish, set up by Mr. B. J. Upchurch of Hitchin.

possessing the desired characters is disqualified at shows promoted by that society.

5. Small fish cannot be exhibited, except in breeders' classes, under G.S.G.B. rules. The minimum body lengths are 3½ in. for Singletails and 2½ in. for the remainder.

6. The society decided to encourage the breeding of large, tough fish which necessitates selecting for large, well-developed bodies. If this is not done a strain of runts may soon be produced as every experienced breeder knows. Many aquarists have said that they like the uniform system of pointings but just fail to see why 24 and four lots of 19 should be allocated rather than five groups of twenty. The 24 points are for body and serve to remind us all that this feature is number one priority.

It was gratifying to find that after making a detailed examination of all the standards, a group of aquarists at Nottingham had praised the precise presentation and definitions of those advocated by the G.S.G.B. They have also recommended a wider adoption of the standards for Twintail, Globe-eye and Bramblehead but suggested that



Methods of measuring a fish referred to on page 241.

the Bristol Shubunkin should be retained. The G.S.G.B. could not recognise this fish because it is a biological impossibility in the Goldfish as we know them. Show us it is a possibility and we will consider the matter. If the intermediate group (Nacreous) is recognised for a particular shape then the Metallic and Matt groups must also be recognised. We have an advantage over the old Chinese breeders because we possess the knowledge of a modern Chinese scientist.

The Society's Achievements in Four Years

Goldfish breeding to standards is a long job and in four years most aquarists will only have raised two generations in a line. A visit to a G.S.G.B. show, however, will reveal that considerable progress has already been made. The nearest approach to the ideal is seen in the Twintails but whereas only Nacreous specimens were available three or four years ago, Metallic and Matt ones may now be seen.

The colours and bodies of Nacreous and Matt Singletails are very good but although much of the "draggle" has been removed from the tail fin, room for improvement still exists. It is pleasing to note that coloured Metallics are appearing at last but not yet in sufficient numbers. Stocks of Globe-eyes and Brambleheads are small.

When the new ideas were being worked out and circulated to members of the Society (this process took more than a year), some of them came as surprises or shocks. However, the remarkable thing was that after the whole project had been explained in full, all members (with one exception) agreed to the proposals.

It was realised that the new standards with their revolutionary ideas would only appeal to the Goldfish specialists and no attempt was made, or ever will be made, to thrust these ideas on other aquarists. The great majority of the leading breeders of Goldfish in the country are members of the society and have been since its inception. We are happy with this state of affairs.

Although members of the G.S.G.B. are working to the

Society's standards it has always been made perfectly clear by the officers that we have no quarrel with the Federation of British Aquatic Societies. Indeed, the G.S.G.B. has always been a loyal member of the Federation and G.S. members act as judges under F.B.A.S. rules. We realise that there are very many non-specialists who keep Goldfish and if they are satisfied with F.B.A.S. Standards for their shows the G.S.G.B. thinks that this is a good reason for their retention.

G.S.G.B. Nomenclature

The new nomenclature of the G.S.G.B. has received some adverse criticism but the only argument put forward against it is that the old names are good enough. Why is not a Singletail called a Shubunkin? A Shubunkin belongs to the Nacreous (intermediate) group and, when it breeds, produces Metallic, Nacreous and Matt specimens. It is not, therefore a true breeding type. *Singletail* refers to the shape and particular feature of a variety which may occur as Metallic or Nacreous or Matt specimens.

In the past the "Veil" has been considered to be the most important feature of the Veiltail type of fish. We now know that the dividing of the tail fin is by far the most important character and the name *Twintail* emphasises the fact.

No fish has eyes which are "telescopic". Fish with these bulging eyes are short sighted. We think that our term *Globe-eye* is more suitable. Lionhead? Well, I ask you . . . Poor lion!

Metallic, Nacreous and Matt are obviously so superior to Scaled, Scaleless, Calico, etc. that there is no need to discuss the matter.

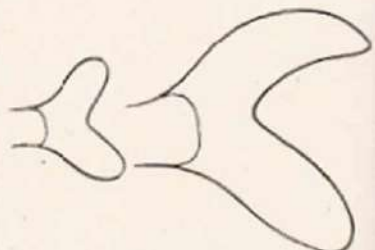
Conclusions

In attempting to sum up it should be noted that G.S.G.B. statements concerning the impossibility of producing the tail of the Shubunkin, the head and trunk of the Veiltail, etc., etc., as depicted in the F.B.A.S. and Bristol standards, have never been challenged. Various people have complained of the new nomenclature but they have never attempted to substantiate claims for the old names, whilst others have talked vaguely about distinguishing the three groups according to the scales or colours (and thereby exposing their complete ignorance on the matter) but nobody has been able to refute the G.S.G.B.'s conception of the three groups differing in the amount of reflecting tissue ("shine").

It is more than plain to anybody who has read the scientific literature on Goldfish, examined in detail the anatomy of different varieties, studied the development of the different breeds during the egg and alevin stages, and examined whole spawnings, that some of the fish depicted in F.B.A.S. and Bristol standards are biological impossibilities.

Non-specialist's Attitude

No doubt, to the non-specialists the finer points of standards and the rather exacting requirements of the G.S.G.B. make no appeal. The non-specialists appear to be satisfied with F.B.A.S. and Bristol standards and, if this is so, I see no reason for changes to be made at shows which cater particularly for the non-specialist. However, I do not think that anybody could expect a specialist society with a scientific outlook to agree to standards and ideals when there is irrefutable evidence that they are false.



Tail fins of young and old fish. Note how the bigger fin begins to droop.



The Editor is not responsible for opinions expressed by correspondents

F.B.A.S. OFFERS ITS HELP

SIR.—Would you make it known that the Federation of British Aquatic Societies is only too willing to provide lecturers to any society?

We can also provide speakers, free of charge, to newly-formed clubs to assist them in the successful running of their organisation and we have a service whereby any aquarists who do not belong to a society may obtain details of the one nearest to them.

Individual aquarists and club secretaries are invited to write to me for full details.

1, Coronation Court,
Willesden Lane,
London, N.W.6.

R. O. B. LIST
General Secretary

GOLDFISH AT SOUTH KENSINGTON

SIR.—Your correspondent, Mr. J. Brunning, has made several criticisms in your June issue of the Goldfish exhibit at this Museum, some of them well justified. By a combination of good fortune and precautionary measures, the fish gallery survived the war almost intact. Since national economy reduced the exhibition staff, their energies have been concentrated on less fortunate parts of the Museum. This does not, however, excuse us for retaining the old inaccurate labels, and on his next visit I hope Mr. Brunning will see them changed for the better. I hope he will then call on me and give me the benefit of further suggestions including possible sources of the good photographs he would like to see substituted for the models.

The models are not intended to be eye-deceiving representations of the fishes but simply to illustrate the main characteristics of the varieties. We are trying to find a method of exhibiting the actual specimens.

We are not likely to find room at South Kensington for drawings of breeders' standards, which are not, after all, Natural History. The history of the Goldfish and its fancy breeds would be a proper subject for a museum of domesticated animals and Mr. Brunning may be interested to know that plans for such a section of this Museum are afoot, although it will not be housed within the South Kensington building.

London,
S.W.7.

E. TREWAVAS (Dr.)
British Museum (Natural History)

PLAN FOR JUDGES

SIR.—In reply to your correspondent Mr. J. W. Davies (WATER LIFE, June issue) and on behalf of the Aqua Ring Group (Forest Hill A.S., Lambeth A.S. and Pisces A.C. (Dulwich)), I would like to draw attention to the fact that, failing an accredited judge, table shows are not invariably judged by members of the individual society staging the show. For a number of years it has been the custom for neighbouring societies to exchange experienced aquarists as judges, this being the obvious answer to the problems of money and an outside opinion.

This particular point is one of the many ideas upon which this Group was founded, and since its inauguration some twelve months ago there have been a number of shows judged in this fashion. Apart from the question of cash, other more important items must be taken into consideration. Members of the individual societies have frequent contact one with the other, show secretaries obtain new ideas, the volunteer judges gain

experience and the whole outlook is broader, thus, from being isolated bodies, we have become a larger band of friends.

There are teething troubles, of course. For instance, some members are not always acquainted with every fish with which they may be confronted, but owing to the fact that the visitor is a familiar friend doing his best, the leg-pulling which ensues makes for a happy evening. It is not a life-and-death struggle taking place, and in any case even fully-accredited judges sometimes leave much to be desired.

To broaden the idea of a central point to which clubs may send information, this Group points out that they have recently completed a Home Furnished Tank Competition by the above means—with entries as far apart as Norwood and Mottingham, some 10 miles as the bus route goes. Add to this the inter-club quizzes, lecture competitions, visits afield etc. (the list is large) and one can see how useful such central points can be. It is humbly suggested that larger organisations now existing might well ponder anew the whole question of group or area activities.

Dulwich, E. E. YOUNG
Secretary

TEMPORARY PARTITION IN POND

SIR.—In the early days of Burton-on-Trent A.S. I was sufficiently interested in tropical fishkeeping to lecture to the members on breeding them. At that time I kept Acaras, Angels, Rosy Barbs, Leeri Gouramies, Fighters and Black Widows, among others, and crossed Swordtails with Platies.

Since then I have changed over to coldwater fishes and find that side of the hobby equally fascinating. My garden pond, measuring 14 x 8 ft., had in it in July last a breeding pair of Shubunkins, a female Common Goldfish ready for spawning, one Comet, one Moor and seven small Common Goldfish.

On the 14th of that month I found that the male Shubunkin was chasing both of the females in breeding condition. The females could be seen flicking their tails out of the water and depositing their spawn. During the day the fish were fed liberally four times with chopped earthworms. During this period, the other fish were schooling in the centre of the pond and seemed to show no interest in the activity going on around them. Very little of the spawn was eaten.

That night, I ushered the fish down to the deep end of the pond and kept them there by making a partition of linen hanging over a stick wedged across the pond and weighted down by means of large pebbles. Next, I placed a sod of grass and some crushed lettuce leaves into the shallow end. Part of the spawn was left in the pond but some was transferred to an indoor tank. That inside hatched in three days and that in the pond within a week. Few of the eggs were infertile and all the fry are doing well.

Most of the spawn in the pond adhered to the sides. I am not worried by cats coming into the garden, for the pond, which has steep sides, is further protected by a sharp-pointed surround.

Spendon,
Derby

F. D. J. HOCKEY

NEW NAMES FOR OLD

SIR.—Leon F. Whitney's book "All About Guppies" published in America, makes interesting reading but there is much in it with which breeders of *Lebistes reticulatus* will not agree. I list some of the points that occur to me.

I consider the illustrations are exaggerated and bear no relation to life-size specimens.

The names given to some of the male types are confusing. The so-called "Betta Tail" is that which has been known for some time throughout the aquatic world as the Veiltail. It was so named, we are told, when it was first exhibited by Charles E. Vesel of Brooklyn, U.S.A. as far back as 1935, on account of the resemblance of its tail (caudal) fin to that of the Veiltail Bettas.

Mr. Whitney calls another type the "Cofertail" whereas it is, in fact, the variety universally accepted as the Speartail. Like the Veiltail, it has been known by this name from the time it was first exhibited. The tail formation resembles a spear whereas the true Cofertail, which was developed by the writer, has a fin similar in shape to the cofer shovel.

I am afraid that some of the males depicted and described as, for example, the "Swallowtail" and the "Superba" are not fixed varieties. They frequently appear as variable manifestations of one or other of the recognised and stabilised types. Their fin formation changes its shape as they grow older.

With one exception, the females have been given names which differ from those of the males and thus give no indication of the strain or variety to which they belong. They all bear a strong resemblance to the late Dr. Abbs' strain though there is no mention of him or his work on Guppies in the text of the book.

Confusion also exists because of the different names given by the author to colour variations. What does the author intend to convey by the name Gold Guppy? Is it the same as the British Gold variety (known in the U.S.A. as the Blond Guppy) or is it more like Goodrich's Golden which is the equivalent of the British Goldfaced?

The suggestion that infusoria must be fed to young Guppies is unnecessary. The youngsters will take small livefood such as Brine Shrimps and fine dry foods from the day that they are born. To say that well-fed Guppies will not eat their young is not true. Some females eat their offspring even when they are kept with a continually replenished supply of Daphnia.

There is criticism of the standards adopted by our Federation of Guppy Breeders' Societies but I maintain the author has misunderstood the intentions of those of us who helped to draw them up. There are standards which breeders are attempting to reach. When they do, the standards will be advanced. One thing about which I am certain is that none would seriously want to see no limit to the size of the Guppy. Why did Mr. Whitney omit to publish our standards for Scarftails and Veiltails?

Kenton, Middx.

W. G. PHILLIPS

"All About Guppies" by Leon F. Whitney, D.V.M. was reviewed in the February 1954 issue. His critic is one of the pioneer Guppy breeders of this country who has done much to improve a number of strains. More recently he has been concentrating on developing one in which the males have jet black pectoral fins. He calls them Paddle-fins, a name which is self-explanatory—Ed.)

FURNISHED AQUARIA AT SHOWS

It was with extreme interest that I read the letter in the August issue of WATER LIFE by Mr. W. S. Mellish, chairman of Willesden A.C., on the above subject. I agree that there has been a falling off of entries in the furnished aquaria classes.

From experience I know how difficult it is to coerce or persuade members to support this section. The trouble appears to be due to more than one factor.

A number of competitors have only one good set-up aquaria at home and their best plants are kept in it. The thought of disturbing it only to reset it again after the show is over sometimes deters them from entering. Such treatment does tend to set plant life back. The question first raised some time ago in your pages concerning a novice's chances against experienced competitors who have won prizes over a number of years crops up here. Lack of transport to convey compost, rock, plants and fish may apply in the case of Mr. Mellish, but my society have always offered compost and rock of good quality for use by competitors, so that only fish and plants in the way of furnishings need be carried. Even so entries have been few.

It is from this point that I disagree with Mr. Mellish. He says: "One must be an artist". Of course, he should, in the sense of creating a picture that will be pleasing to the eye, or so designed as to raise favourable comment on its style or originality. The F.B.A.S. system of awarding points for quality of plants and general design is, in my opinion, very fair and, I might add, a far more accurate one than some used prior to the present methods evolved by the F.B.A.S. Judges and Standards Committee.

If the writer will examine his letter he will find that he is arguing against himself. As a judge examining entries in a furnished aquaria class, one of the first things one notices is the appeal it makes. This is more often than not impressed upon the judge's mind by the very beauty of the plant life used, together with the pleasing effect of the general assembly. Good plants can make or mar an aquarium. It is not the man with the longest purse who grows the finest plants. The exhibitor who exercises care and patience can grow better plants than his neighbour, rich or poor, if he so desires. Plants form an important part of the set-up tank and can earn up to a quarter of the total points.

If an exhibitor grows his own plants, it will take longer than 28 days to produce good specimens. Therefore, this is a fair margin, because it allows the competitor an opportunity to purchase plants before the event, which in competitions of this nature is usually announced months ahead. You could buy the finest plants in the world and still have the worst ones within

seven days if you did not know how to tend them. With regard to variety, the points are narrowed down so that four good specimens could score more points for their quality than 18 run ones in poor condition.

The question of design is part-and-parcel of the general set-up, and, with plants put in the right places and of the correct type, the competitor is half-way home. The rock design and formation is only subsidiary to the whole.

I am afraid I cannot agree with the writer's views either as a judge or as one who sells plants. An athlete trains to win an event by long preparation. An aquarist should plan and prepare for his event and grow good quality plants. The rest is a matter of pitting his skill against the other competitors. As for "scrapping the whole daft system" that seems to indicate your correspondent's attitude generally. The code of rules that have been prepared were not the work of a few hurried moments but the result of years of study and much discussion and deliberation.

We have been talking about aquatic plants. I have refrained from mentioning fish as these are judged on the standards already set out for them.

W. J. CHRISTIAN

PRECOCIOUS PEARLS

SIR,—As one who has bred and exhibited fish for a number of years and has gained over 150 awards, I read with interest the contribution by Mr. A. J. Holloway, in the August, 1954, issue, to the discussion on separate categories for champions and novices. I agree with what he says and think the scheme a fine one.

It is, however, easy to kill the interest of novices in exhibiting in a number of ways and I quote one example. At a recent open exhibition I competed in the Tropical Breeders' Egg-layer Class where the judge gave a prize to a team of six first-class Pearl Gouramies which appeared to be in full breeding condition.

and yet according to the data given in the catalogue were only six months old. Was the date correct or was there a printer's mistake? I know that the fish would have been eligible had they been bred as far back as twelve months before the show but they were stated to be only six months old and if that was true their development was extraordinary.

From my experience, it is unusual to get such rapid growth. For example, I have kept three *Trichogaster leeri* in a 38 x 20 x 15 in. tank, in running water, for twenty months. When I bought them they were 1½ in. long. Now, after careful treatment, they are 3½ in. long and two of them have just come into suitable condition to be put down for breeding. This is in keeping with the information contained in books on fish breeding which tells us that pairs of Pearl Gouramies should be from eighteen months to two years old. If these fish can be brought into condition and grown up to a reasonable size in six months how is it done and why are there so few such specimens about? I would like to hear from other breeders who have experience with these fish.

Harold Hill,
Romford, Essex.

W. E. GAWLER

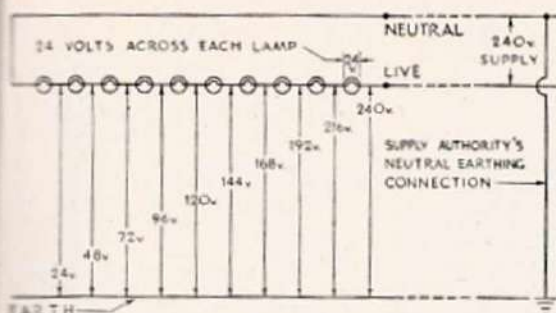
CAR BULBS FOR TANK LIGHTING

SIR,—I feel that a few comments would not be out of place concerning the efficiency of low voltage series lighting, and also to dispel any false sense of security as a result of the article by Mr. J. E. Edwards in the June, 1954, issue of WATER LIFE. To start with, 24 watts of low voltage lighting is, for all practical purposes, equivalent to a 25 watt mains lamp. The low voltage lamp should have an increased efficiency of up to 25 per cent, but this is offset by the virtual point source filament which gives hard and sharp shadows and a rapid diminution of light towards the sides and corners of the tank. By no stretch of imagination can one compare a 24 watts low voltage lamp to a 40 watts, much less a 60 watts, mains lamp.

I must emphasise that the foregoing remarks apply strictly to the light output of the lamps and does not take into account their colour. It is possible that the spectrum emitted by low voltage lamps is more suitable for plant growing than that given by mains lamps. This is a matter which can only be proved over a period.



A well-balanced prizewinning furnished aquarium, containing a Veiltail Goldfish, set up by Mr. B. J. Upchurch of Hitchin.



The simplified diagram, based on a sketch provided by Mr. Gwynn demonstrates the increasing voltages available when ten twenty-four volt lamps are on a mains circuit.

For the benefit of those who might wish to experiment with low voltage lamps may I add a word of advice and warning on their installation? If the lamps are in series and fed straight off the mains there is little increased safety in using low voltage lamps. Shock danger lies mainly in the potential to earth or any other conducting surface within reach, not the potential across the lamp. Eight out of ten 24 volt 24 watts lamps have dangerous voltages available, as the accompanying diagram shows, and of course if someone puts a two-pin mains plug in the other way round the low voltage end becomes the "hot" end.

All the wiring and fittings should be the same as if mains lamps were involved. In no circumstances should lampholders such as shown on page 199 (Nos. 4 and 5) be used in a lighting hood on a series mains circuit. If, of course, a low voltage transformer is used to feed the lights, and I strongly recommend this system if you want safety, any of the lampholders illustrated will do.

Potters Bar,
Middx.

V. G. GWYNN

SIR.—If space permits I should very much like to add a few qualifying comments to Mr. J. E. Edwards' article, "Novel Tank Lighting Arrangement", which appeared in your June issue.

Mr. Edwards is correct in supposing the illumination provided by 12-volt car bulbs to be superior in quality to that of domestic lamps. In point of fact, the luminous efficiency of the former is about 18 lumens per watt as against 10 for the latter. This higher efficiency is associated with a higher filament temperature which also results in a larger proportion of blue to red light and hence a "whiter" light. Considering intensity only, therefore, a 24-watt, 12-volt car bulb is roughly equivalent to a 40-watt, 240-volt lamp. Owing to the difference in wavelength distribution it appears that the advantage obtained from the use of car bulbs would consist not so much in better growth of aquatic plants, which, I believe, utilise mainly infra-red light as in more intense visible illumination for equal consumption. My own view is that the presence or absence of algae is dependent on much more subtle ecological differences than this.

A condition inherent in car bulbs, however, is that the temperature at the mid portion of the filament is considerably in excess of that at the ends and this, in conjunction with the higher mean filament temperature, gives the car bulb (and here I differ from Mr. Edwards) a shorter expectation of life than the domestic lamp. The accepted life figures for manufacturers' sampling tests are of the order of 300 and 1,000 hours respectively. Both types of bulb are tested under the same conditions and mounted in their normal working positions. No vibration is applied to either. Mounting a domestic lamp in a horizontal position shortens its life slightly, as does fixing a car bulb vertically.

Other points in Mr. Edwards' article, I think, also require clarification. The watt, for instance, is a unit used to measure the rate of consumption of electrical energy, so that to employ the term as Mr. Edwards does, e.g., "600 watts per hour", or "1,600 watts per day", is meaningless. Domestic electrical energy is measured in watt-hours, not watts, and "watts per hour" to an electrician is in the same category as "knots per hour" to the sailor.

Mr. Edwards refers to his circuit as a "12-volt system" whereas, of course, it is a 240-volt system. It could deliver shocks of any magnitude from 240 volts downwards in descending multiples of 12 volts and, should a bulb burn out, all parts of the live side of the circuit up to that point would be at 240 volts.

The voltage across the terminals of a "blown" lamp would also be 240 volts and each holder would, therefore, have to be capable of withstanding 240 volts, not 12.

Having already contributed to your pages at some length on the subject, I can only reiterate here that "earthing" an aquarium installation is neither as simple as it sounds nor, in many situations, necessary. In passing, it must be pointed out that earth connections to gas pipes are not only dangerous, but contrary to supply regulations.

It is difficult to see why Mr. Edwards advocates the use of fuses at intervals along the circuit, since the same current would flow through them all, while the device of neon lamps to indicate defective bulbs is likely to prove an extravagant complication. In fact, expenditure of this kind might well make a substantial contribution towards the setting up of a proper low voltage system, supplied by a transformer, with lamps wired in parallel in the normal way. Such a system would be safe, continue to operate should a lamp fail, obviate the search for blown lamps, permit individual or group lamp switching (which Mr. Edwards' system does not), not be dependent on the use of a fixed number of bulbs, allow the legitimate use of fuses to protect sub-circuits and give the benefits of high efficiency lighting without the disadvantages I discuss here and others, of which lack of space precludes the mention.

Faversham,
Kent.

C. W. THOMAS

(The above two letters are those which were crowded out of the August issue and referred to on page 189 of that number. Since Mr. Thomas wrote his original comments he has, of course, had the opportunity to read Mr. Fudge's contribution to the discussion and this has led him to send a further letter in which he states: "Mr. Fudge advises that a mains bulb be connected in an earth lead. The 'Regulations for the Electrical Equipment of Buildings' of the Institution of Electrical Engineers, states however, in Regulation 100(A), that 'The electrical impedance of the earth-continuity conductor . . . shall be such that the impedance between the earth electrode or earthing terminal or connection provided by the supply authority and any point on the earth-continuity conductor shall not exceed 1 ohm.' The impedance (resistance) of, say, a 60-watt 240-volt bulb is 960 ohms. The opinions of Mr. Edwards and Mr. Fudge (themselves opposed, be it noted, in their views), illustrate with considerable clarity that ingenuity in electrical matters is not enough and may lead to the very lack of safety which they wish to avoid unless it is accompanied by sound technical practice."—Ed.)

BRISTOL'S COLDWATER JUDGES

SIR.—Your paragraph on page 194 of the August issue could be interpreted as raising some little doubt as to the qualifications of the six members nominated to judge the coldwater section at the forthcoming open show of Bristol A.S.

I was largely instrumental in their appointment and I feel confident that they will give satisfaction. They have for the past two years gone through a stringent training and/or refresher course.

It may be, of course, that you were doubting the exhibitors rather than the judges. I know some aquarists who compete at shows are hard to please, but it has always been my contention that if you can explain why you gave certain awards, you have nothing to fear.

Westbury-on-Trym,
Bristol.

E. R. BLUNSDEN

(The comment was intended to imply that outside exhibitors might not send as many entries as hitherto because a panel of members, well-known as they are in the South-west, had been appointed to judge. We hope we are wrong but aquarists are conservative in some things and may not be ready to recognise that successful fishkeepers, in this case trained locally to judge shows, can, with experience, do as good a job as members of panels approved by the Federations. Quite apart from the fact that Bristol A.S. left the F.B.A.S. some time ago, and so would not want to engage its judges through that organisation but to make independent arrangements, there is the situation in which the Federation has found itself on occasion when it has been difficult to cover events for which it has been asked to provide judges. Rather than deny Bristol's move we applaud it for we have long believed the formation of local panels of judges to be the only solution to meeting the needs of the growing number of societies. In fact, A.S.L.A.S. has one for the London clubs affiliated to it; the M.A.A.S. has its own for the benefit of member clubs in the Midlands and there are other instances of interclub co-operation. Individual members of Bristol's team of coldwater judges may well be asked to function at shows promoted by the S.W.A.S.A. We have long advocated decentralisation and without waiting for a move at F.B.A.S. level area organisations have appeared and have come to stay. Our only doubt was whether individual exhibitors would prove chary about competing under other than F.B.A.S. judges at open events.—Ed.)

We shall be pleased to send a free supply of our "Fishkeeping is Fascinating" pamphlets to show-promoting societies for distribution to visitors to their shows. Send your request to the Editor, WATER LIFE, Dorset House, Stamford Street, London, S.E.1.

PROBLEMS ANSWERED

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

Tubifex Danger?

An aquarist friend tells me that it is dangerous to feed Tubifex to coldwater fish. He says that these worms are parasites and, if swallowed whole by the fish, will eat their intestines.—(H.N.E., Nottingham.)

Tubifex rivulorum is a true, segmented aquatic worm and is not parasitic. However, it is invariably found in sewage-polluted waters which means that it could be host for various kinds of parasitic bacteria. It should never be fed dead and must always be clean and free from debris. It is more suitable as a change of diet than a staple food. Common Earthworms have equal or better nutritional value.

Temperature for Lizards

Can the lizards, *Psammadromas algeris*, *Acanthadactylus coscianus* and *Anolis carolinensis* be kept in an unheated vivarium?—(E.A., Worksop, Notts.)

It is wisest to keep all three of these lizards in warm surroundings, especially in winter and during the dull weather. We have kept *Psammadromas* and *Anolis* and their cage has been warmed and lighted with an ordinary 60-watt bulb. The temperature—75-80 deg.F.—was regulated by a sliding door in the roof which could be adjusted over a window of perforated zinc. In reliable weather the cage was put outdoors and the sunlight was much appreciated. The *Anolis*, in particular, is a pretty lizard which changes colour in varying shades from dark brown to brilliant green.

Tropical Catfish

In my aquarium I have a pair of tropical Catfish. Each day the fish are fed on finely chopped Earthworms. When this food is introduced one Catfish swims in a spasmodic and uncontrollable fashion as

if unable to maintain its balance. At other times it behaves normally.—(O.W.B., Comrie, Fife.)

The *Corydoras* Catfish, when feeding, often seem to swim deliberately in a spasmodic manner in order to stir up the food and mulm and so distribute it over a wider area. It has been noticed that this appears to happen when food is fed in a concentrated mass. It occurs when the fish are about three to four months old and increases up to about two years. The tendency dies down as the fish get older. It may be part of a defence mechanism against enemies.

Breeding Minnows

Could I have some information on breeding Minnows (*Phoxinus phoxinus*).—(R.S.H., Forganenny, Perthshire.)

The Minnow is a member of the large Carp Family and is very hardy. The male in the breeding season takes on a brighter colouring than the female, whilst the female is very full in the region of the vent. For breeding they will require clear, clean



Photograph [W. S. Pitt] Two adult Minnows (*Phoxinus phoxinus*)

water, preferably aerated. The tanks should have a 1 in. gravel bottom clear of plants except at one end where a clump of, say, *Egeria densa* is anchored. To condition them they should be given plenty of chopped Earthworms and mosquito larvae. The Minnow's eggs are heavier than water and sink down between the gravel. They can be seen with the naked eye if one's sight is very good. A 2 ft. aquarium should hold six to eight of them for they are gregarious in habit even at spawning time. After they have spawned the adults will have to be removed or the young will be eaten. Until the young fish get on to larger foods they will require a small but regular supply of Infusoria during the day.

German Breeding Methods

Persuading the Glowlight Tetra to Spawn

Hypessobrycon gracilis. This fish referred to in the text as *H. gracilis* but more correctly identified as *Hemigrammus erythrozonus*, looks at its best in a relatively dark tank with the light coming from the front and just above the tank. The aquarist who intends to breed this species is advised to obtain a number of young fish and bring them up to breeding age and breeding condition himself. It should be possible to tell the sex of the fish when relatively young, as the swim bladder of the male fish is straight and in the female slightly bent towards the anus. When two years old the fish are at the best age for breeding. Breeding methods for Glowlight Tetras are much the same as those described by the authors of ZÜCHTERKNIFFE for the Neon

Tetra (c.f. WATER LIFE of June 1953 page 162). Preparations require the same amount of care and precision as for *Hypessobrycon innesi*. The tank should be all-glass. Pure rain water up to a level of 5 in. should be used to which is added half a teaspoon of cooking salt. The acidity of the water is not important for Glowlights as equally good results have been obtained with acid and neutral water. Six degrees of hardness is the most suitable water condition for both fish and spawn. After the water has been poured into the tank it should be left for a week under moderate light. The tank must be well covered with clean glass. *Myriophyllum* and Water Fern are the most suitable spawning media and are now—

WATER ANALYSIS

Samples should be sent in a clean pint bottle, well packed, to Water Life Analyst, 12, Featherbed Lane, Addington, Surrey, together with a fee of 5s. per sample. The name and address of the sender and details of prevailing conditions should accompany each sample which is submitted.

Sample received from E.Q., Eastbourne, Sussex. Taken from a 24 x 12 x 12 in. tropical aquarium set with a variety of plants in gravel. After an outbreak of White Spot the aquarium had been thoroughly cleaned and left empty for two weeks. The tank was then refilled and allowed to stand for another ten days before introducing new fish. Two days later, for no obvious reason, five fish died and the others were gasping at the water surface. The survivors were transferred to another tank and recovered.

Test for impurities:—Appearance: slightly opalescent. Odour: none. Total mineral content: 0.0372 per cent, satisfactory. Organic matter: 0.0070 per cent. Nitrogen compounds: 0.000004 per cent, very satisfactory. Ammonium compounds: 0.000072 per cent, high, indicative of pollution by vegetable origin. Poisonous metals: none detected. pH: 8.0. Chlorine, as salt: 0.012 per cent, satisfactory.

Suggested Corrections:—The results obtained from the chemical analysis of the water reveal that it is contaminated by organic matter of vegetable origin. The contamination, however, is not serious, and it may have been caused by overfeeding the fishes with dried foodstuff. A thorough examination of the water failed to show the presence of any metallic poisons. It would thus appear that the fish were unhealthy stock and/or that they died from causes other than those which could be attributed to the contamination of the water. It is suggested, however, that it would be an advantage to lower the pH of the water to a value of between 6.5 to 6.8.

Readers taking advantage of the Water Analysis Service, for which only a nominal fee is charged, are asked NOT to send samples to this office but direct to the address given above. The samples are put to a number of tests and reports cannot be made until at least seven days after receipt at Addington. The facilities would cost considerably more if readers made their own arrangements and they are therefore asked to observe the rules.

after careful sterilisation—introduced into the breeding tank weighted down with some clean glass rods. The best spawning temperature is between 75 and 77 deg. F.

The selection of a suitable female fish is not difficult, the one with the fullest belly giving the best spawning. Repeated breeding attempts have shown that the male fish ought to be rather slim. Spawning usually takes place on the third day after introduction of the breeding pair into the tank. Moderate light promises the best chance for success though neither fish nor spawn are nearly as sensitive to light as the Neon. The parent fish have to be removed immediately after spawning is completed. The tank should then be darkened with a newspaper cover. The hatching and the rearing of the fry closely follows that of the Neon Tetra, i.e. hatching will take place after 36 hours and feeding with smallest livefoods starts on the fifth day after spawning.

In and Around the Aquaria World

— By W. J. Page —

A CONTROVERSIALIST and, as it turns out, a humorist, Mr. J. Brunning, who has contributed items from time to time, pulled my leg the other day. He telephoned to tell me about a new enterprise in the Thornton Heath, Surrey, area, describing the firm as pond cleaners. For the moment I thought that some aquarists had set themselves up as a concern for servicing garden ponds when it dawned on me that the shop in question was a branch of Pond's the cleaners and dyers. Whilst casting no reflection on the excellence of their normal work, I suggest that readers seeking their help to clean out ponds might be writing me soon to ask "Why did my fish dye?"

IT seems that, at almost every show I visit in the London area, I have only to move round the end of one of the rows of tanks to find there Mr. J. E. Searle in earnest debate with other aquarists or, as a steward, busily engaged either in answering visitors' questions or doing some job of maintenance. He lives at Tooting where he keeps and breeds a nice little collection of



Mr. John E. Searle
(Balham A.C.)

tropicals; is the active secretary of Balham A.C.; a live wire within the Croydon Tropical Breeders' Circle and is the Judges' Secretary for the Association of South London Aquarist Societies. He is, I believe, a trade union shop steward and no doubt the training he gets in that sphere serves him well when he makes representations at delegates' meetings convened by the F.B.A.S. and A.S.L.A.S. His interests are wide and he is a knowledgeable and pleasant conversationalist. A frequent visitor to other clubs, he has earned a certain distinction in that he always seems to pick the winning tickets in the competitions that are held! One of his regular "dates" is WATER LIFE Show where each year he wears an official badge and justifies doing so by helping us considerably the whole time the show is open.

AFTER a visit to the Continent, including France, Holland, Germany, Denmark and Sweden, Mr. H. R. Axelrod came to London intending to stay a fortnight and to pay a number of visits to British fishkeepers who had corresponded with him. A series of events upset his plans and he returned to New York after three days here. He has only deferred carrying out his full programme until his next visit, probably during the Spring of 1955. Who is H.R.A.? Well, I guess (sorry, it must have been that cigar he gave me) that were you an American aquarist you would know, for he is a breezy, versatile type whose impact on the fishkeeping fraternity in the United States has not been a small one.

A printer and publisher, he has developed from a keen amateur aquarist to become an editor and author in the field of the aquatic press. He has written, and his



Mr. H. R. Axelrod (left) with Dr. W. Ladiges who is seen servicing tanks in his large fishhouse at Hamburg, in Germany.

firm has printed and published, a number of handbooks in America on different branches of the hobby, was responsible for "Tropical Fish as a Hobby" (with chapters by Dr. Myron Gordon and J. W. Atz), published in England, and, in collaboration with Dr. L. P. Schultz, is preparing a "Handbook of Tropical Aquarium Fishes" to be published in America. One of his many activities is to edit the bi-monthly magazine "Tropical Fish Hobbyist" which he founded some three or four years ago. He has taken two American degrees, first B.S. and then M.S., is a member of that country's Biometrical Society and has had the appointment for five years of Professor at New York University.

With only five or six hours to spare before returning home by T.W.A., he contacted me and before long, over a table at the May Fair Hotel, Mr. F. W. Batchelor (manager of Poultry World Ltd., publishers of WATER LIFE), Mr. K. D. Fawcett of Epsom (a prominent member of Kingston A.S. and noted as a breeder and exhibitor), who joined us there, and I, were in animated conversation with our host, who had much to tell of his Continental contacts, including the Swedish keeper of Fire Barbs, a species of *Barbus (Puntius)* about one inch long, fiery red in colour with intense black stripes; the German concern whose hatcheries outdo anything seen in America for size and layout; the visits to Dr. Ladiges in Hamburg and Mr. G. J. M. Timmerman the fish photographer, in Amsterdam. Some of the outstanding Mollies bred in the Fawcetts' fishhouse built at the bottom of their garden come from specimens sent over by H.R.A.

We had dined and wined so well that we left little time to let our visitor catch his plane but a quick journey by car meant that he was able to check in at B.O.A.C.'s terminal at Victoria two minutes before the coach was due to leave for London Airport. When visits he had to delete from his shortened schedule are made next year, near the top of the list will be Mr. R. W. Andrews of Harringay, who has corresponded with him regularly.

THE Revd. P. M. Quinn of St. John's, Newfoundland, who soon revealed a wide knowledge of several livestock hobbies in addition to successful keeping and breeding of Goldfish and tropicals, was another welcome visitor to WATER LIFE office. Fast becoming a Newfoundlander, he hails from the United States where as a Roman Catholic priest and schoolteacher he has had a lot to do with many people in Washington, Seattle and Chicago, especially young people.

His hobbies range from cattle farming, poultry keeping, beekeeping, bird-keeping and, of course, fishkeeping. As well as having a liking for breeding Goldfish, especially Veiltails, he has come to regard the Fighting Fish as a subject of absorbing interest. The fact that he is concerned with the education of young folk has made him convinced that all societies should encourage junior sections.

After working hard to introduce the hobby of aquarium keeping to his contacts in different parts of America, he is now, on being transferred to Newfoundland, turning to his new charges and hopes to persuade them to become aquarists on a large scale. A firm believer in the value of our hobby as an antidote to the fast pace of modern life, he rates fishkeeping as the finest pastime among all the livestock fancies.

With hay as a good runner-up, he finds alfalfa powder a first-class medium for producing the Infusoria on which he feeds his fish but regards finely shredded earthworm as the diet *par excellence*. When in America, the institute to which he was attached had a large dairy farm. There, surplus milk, after the cream had been separated, was poured into a pond. This provided a never-ending source of Infusoria which in turn gave sustenance to periodic flushes of *Daphnia*. A bucket was dipped into the pond and the contents poured without ado into the Goldfish pools. The result? Big, sleek fish in tip-top form.

AMONG the coldwater section of the large Nottingham A.S., one of the most respected members (he also belongs to the Goldfish Society of Great Britain) is Mr. Mark Welch who lives at Borrowash, situated between Nottingham and Derby. An exhibitor and breeder who manages to get along to a number of our larger shows,



Mr. Mark Welch
(Nottingham A.S.)

he is particularly interested in Veiltails and has lectured on their care and maintenance. As one of the more serious breeders he frequently reports on progress made and at a recent meeting demonstrated with over thirty Veiltail fry how to select specimens likely to grow on to become potential exhibition stock. Five stages of culling reduced the total to five and even then the number could have been smaller. It gave a good idea of the good fish the average breeder can hope to get from a spawning even when the parent fish are of a high quality. He having accepted an

invitation to contribute an article to this journal, his views on Veiltails and, in particular, on the standards advocated for that variety of Goldfish, will be available to a wider circle.

THE Spa Hotel, Buxton, in which I stayed overnight a year or two back on my way home from the Lake District, has installed a tropical fish aquarium in the lounge where it is seen by the many people who use this big hotel. Already the aquarium has created considerable interest and I think it would be a good idea were other hotels to follow suit.

I AGAIN had a welcome from the organisers of A.S.L.A.S. interclub show at Sutton, where the satisfactory entry included some choice exhibits. The Bristol Shubunks were of good quality. The breeders' classes were also well-supported. Another strong section was that for live-bearers, including a number of Guppies that were well up to standard. The Association has spent a considerable sum on buying its own tanks, a stock that will be in great demand as each affiliated club holds its own annual event.

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Among those at the top table were Mr. L. W. Male, secretary, Mr. D. Atterwell, treasurer, Mr. T. L. Dodge, the lecturer's panel convener, Mr. W. L. Mandeville, judges' panel convener, Mr. C. D. Rae, and Mr. E. J. Druce, the last two being members of the committee. In addition to myself non-members present were Mr. Lee, chairman of Belle Vue A.S., who also represented the F.N.A.S. and Mr. D. Risdon, the Zoo's popular General Manager, who welcomed the gathering on behalf of the Dudley Zoological Society.

With the facilities the Zoo can offer and the promising response by members and their families on this first visit to the Zoo I forecast that the M.A.A.S. will soon be holding annual conventions there which will equal if not surpass in size the well supported assemblies at Belle Vue Zoological Gardens that are a feature of the Northern Federation. One day perhaps the Federation of British Aquatic Societies will be encouraged to arrange similar gatherings for aquarists in the south at the London Zoo. It could be done and I think it should.

IT was the clash of the Willesden and Bethnal Green shows that made me miss the September Assembly of the F.B.A.S. I would have liked to be present since the Council gave its views on the discussion in these columns of the need for Novice Classes at shows. It may be thought that the Council's decision to make its opinion known was a little badly timed since the debate continues in this issue and has yet to be summed up. The F.B.A.S. will be invited to send their considered opinion to WATER LIFE for the February 1955 issue and it is to be hoped that the final findings will take into account the opinions of all affiliated clubs which I hope will be voiced by delegates.

(Continued next page)

Aquatic Press Topics

Take Care with Copper Sulphate

THAT insidious invader of fish tanks, Blue-green algae, is possibly the most tenacious and harmful of all the primitive plants. In its extreme form it takes an uninhibited delight in festooning and choking the choicest plants with a deep green blanket and exudes a tell-tale and quite revolting earthy odour. Altogether, an unpleasant customer.

Several treatments have been suggested, including a mixture of acriflavine and sea salt, the introduction of Green algae as the two types seem unable to live in close proximity, and the use of a very weak copper sulphate solution. We have hesitated to recommend this latter chemical in view of the extreme importance of using solutions in really low dilutions. A slight error in estimating the quantity and the result could be not only dead Blue-green algae, but dead plants and fish as well. Concentrations in excess of 2:10,000,000 can prove lethal and Mr. C. van Duijn of Holland gives us the following instructions for its use: "A stock solution of two grams of copper sulphate in one litre of distilled water is made; 10 cu.cms. of the stock solution is added to each 100 litres of aquarium water". He adds that inaccurate dosage can kill the fish so it is advisable to remove them from the affected tank before treatment.

This use of copper sulphate was brought to mind when reading a paper in NATURE (G.B.) headed "Copper Sulphate as an Aquatic Herbicide". The authors, after finding that a canal in the Sudan receiving water containing 1:1,000,000 of copper sulphate contained no water plants or snails in its 9½ kilometre length after eight months, carried out a further experiment giving an initial treatment with 30 p.p.m. of copper sulphate followed by a continuous influx of 2 p.p.m. of the same substance. In eight months the following observations were made. No plants grew nearer than three kilometres downstream from the point of introduction, only *Potamogeton nodosus* grew within 10 kilo-

metres, although at lower points *Najas pectinata* and a little *Chara globularis* were found. Finally, no bilharzia snails were discovered. The scientists conclude by saying that further experiments are being carried out to ascertain if modifications of this method are practicable as a water plant control treatment.

What may be useful in Africa can serve as a warning to us amateur aquarists: as little as one part or two parts per million of copper sulphate can have a disturbing effect on aquatic flora and fauna so if this compound is issued for Blue-green algae control just remember—take it easy.

DEADLY *Dytiscus marginalis*, the Great Diving Beetle, can take its toll of fish in an outside pond. It is not easy to catch and the only effective way is with a net when it comes to the water surface for air. In the NEW ZEALAND AQUATIC WORLD Mr. L. Jackson describes a trap which has



Photograph [J. Clegg, F.R.M.S.]
Female Great Diving Beetle (*Dytiscus marginalis*) breathing at the water surface.

proved effective in his own pool. His wife had the idea of making a few holes, with a ¼ in. screwdriver, about an inch from the bottom of a tin can. The holes were thus smooth on the outside, making the entry of the beetles easy, and sharp and ragged on the inside, making their escape difficult. A piece of raw meat was placed in the centre of the bottom of the tin and the top of the can was covered with muslin held in place with an elastic band. The apparatus was then submerged in the pool. Beetles attracted by the meat entered the can, and drowned when they had no access to the water surface. Proof of the efficacy of this simple gadget is shown in Mr. Jackson's report where he says that over 20 *Dytiscus* were caught in the first day—more than half of them drowned.

Meat is now off ration so we can take a sliver off the joint without a troublesome conscience, but don't keep the same piece in the can for more than one day, otherwise there is a strong likelihood of water pollution.

IN our interest in elderly tropical fishes (see this column for June and August) we must confess not to have considered previously the fishes' contours. If they

lived to a ripe old age we have not enquired whether they displayed elderly rotundity or whether they showed that unhappily named condition known as "hollow-belly". Now up comes a Zebra Fish (almost four years old—might we whisper that it is a female?) with the proud distinction of carrying off a fourth prize in a class for Danios in the June 3 table show of Hendon A.S. Its owner, Mr. A. F. Baldock, does not suggest that the standard of the exhibits was particularly high but anyone who has kept Zebras knows that, generally speaking, their motto seems to be a shortish life but a lively one. After two years they tend to have either heavily developed underparts or a vaguely emaciated appearance. In both cases their department suffers and they are past their showing—even table-showing—days.

Our correspondent says that his fish has a rotund body but that it is not developed to an extent beyond that generally observed in females of the species. Main point which gives away its age is a convex curvature to the upper body profile between the dorsal and the caudal fins.

Mr. Baldock's specimen reflects credit on its owner who has had it in his possession for almost three years. There must be few Zebras capable of holding their own in a class of 12 when approaching four years of age. Congratulations, m'lady.

In and Around the
Aquaria World

(Continued from page 248)

IT was with regret I learned that soon after the National Aquarists Society's show in June, its treasurer went sick and had to spend some weeks at home. Mr. F. G. Odams is one of those men who work hard without any fuss and so get things done quickly. His very conscientiousness makes him most concerned when the society's progress suffers a setback and I may not be very far from the truth when I suggest that his indisposition was largely the result of his worrying when the 1954 show faced unexpected difficulties which, fortunately, Mr. Odams and his fellow councillors managed to overcome. The illness caused an understandable slight delay in the accounts for the show being presented but by now the members are aware of the position. Considering the extra expense the society was involved in this time, the figures are not so bad as some had feared.

DETAILS were given, in this column in the last issue, of the proposed public aquarium in Durban, South Africa. Reference to the scheme appears in a recent issue of *Nature* where Mr. R. Clarke of the National Institute of Oceanography reports on the work done by the South African Association of Marine Biological Research. He confirms that much good research can be carried out in the waters off the east coast of Africa and explains that, whereas, on a number of tropical seaboard government sponsored stations have been set up, this combined research centre and public aquarium will only be built if enough money is forthcoming in the way of private subscriptions. It will be a great pity if through lack of official backing any delay to the scheme occurs.

From Continental Journals

Breeding the Fruit Fly

MR. U. Emmert, in an article in the January issue of DATZ (Germany), described the breeding of the little fruit fly, *Drosophila melanogaster*—which is so well known to all biologists—as a food for Tooth-carps, Characins and Barbs. The fruit fly is very easily bred. Emmert breeds them in small glass jars in a gruel made of semolina or cornflour which covers the bottom of the jar to a depth of 1-2 in. An object on which the flies can rest has to be added and the jars should have close-fitting lids although they should not be airtight.

The best breeding temperature is 72-76 deg. F. Five small cultures will produce some 300 flies daily. The flies are fed to the fish by just dropping them into the tanks. Sprinkling them with water will help the fish to pick them up. These little fruit flies form a very good food which is readily available all through the winter.—H. O. MUNRO.

News from the North-west

Carlisle Society Prepares Interesting Winter Programme

MOST of us were very concerned one August morning when we opened our newspaper to see that a dispute between Fleetwood A.S. and Blackpool & Fylde A.S., their nearest neighbours, had "hit the headlines". When quarrels between local societies are read in the press circulating far outside the area, as happened this time, much harm can be done to the hobby. In future years, the Blackpool affair will no doubt be regarded as a "storm in a fish-tank", as a well-known Fylde authority put it to me. Personally, I think the protest was in order, but that the position was exaggerated once it was reported by the national newspapers. Furthermore, even 28 days is far too brief a period of ownership to merit an award. Non-competitive classes should cover recently acquired fish.

I found a very happy and friendly state of affairs amongst the officials of the Carlisle and District A.S. when I was again in the Border city recently. It was in January 1952 that a gathering of 30 supporters met at the King's Head Hotel to form this society, following Mr. Armstrong's appeal for support. They held their first meeting in the Y.M.C.A. Lounge the following month, electing Mr. W. T. B. Routledge as chairman and Mr. S. Crosby, secretary. Now, with Mr. E. Simpson bearing the secretarial pen, there are some 70 members and prospects of several more.

They meet the last Thursday of the month (not the first, as stated incorrectly recently). Charting with two officials, I learned that at least 16 of their founder-members are still with them, and all told, the society now numbers about 80 tanks. I can certainly recommend the society to the fishkeepers in the area who have not yet given their support. The society's officials are very keen to overcome the difficulties of a city isolated by miles of mountains from other towns which otherwise would help out at their shows and meetings. Points are awarded to all winners at their shows and, at the end of the year, the highest aggregates in the cold and tropical

sections receive certificates and prizes from the committee. Some of the plans for this Autumn and Winter, following the last table show of the year in October include a quiz in November with Mr. E. Hardisty (hon. vice-president and a foundation member) in the chair, and a film show in December.

A "best home tank" contest will be judged by a panel of members. Next year the Society hopes to run a fish show with the Cumberland Horticultural Society's flower show in the local market, and the committee is trying to keep in touch with the Dumfries and Workington societies, despite the distances they are apart. The secretary's address is 51 Prescott Road, Longsowerby, Carlisle.



Prominent in Liverpool business circles, Mr. P. G. Garlick is also well-known as an aquarist. He is a member of Merseyside A.S. and chairman of the local Naturalists' Association. He keeps several tropical fish tanks at his home in Birkenhead.

Marine aquaria are not so commonly kept in the north-west as they were in the Victorian hey-day of Sir William Herdman, the pioneer of marine biology in these parts. Many amateur aquarists whose special interest lies in plants will, however, envy the tank of seaweed now under cultivation by Dr. E. M. Burrows, lady lecturer in botany at Liverpool University, who recently went there from Australia. This is believed to be the only tank of its kind in the country. Working with another woman botanist, Dr.

S. M. Lodge, of the Marine aquarium at Port Erin (which you may visit when on holiday in the Isle of Man), she has obtained strong evidence that hybrids occur between seaweed species. Crosses between pairs of three different specimens are being grown in the tank in the Marine Laboratories, Liverpool.

Seaweed "eggs" are placed in a culture solution made up in sea water and then fertilised. When sufficiently grown to be recognised, the sporophytes are planted on stones fixed to the rocks in littoral zones on the Anglesey coast, to mature in their natural environment. A second tank is being built for studying the plants under alternative conditions, and Dr. Burrows is also using the tank to study the life histories of algae which form the green weeds in the Mersey and other rivers, and to determine how they migrate up-river.

Here's something you can't put in your marine aquarium! In the last twelve months there have been stranded on the south Lancashire coast two live bottle-nosed whales of 21 ft. and 25 ft., one dead lesser orca of 32 ft., a bottle-nosed dolphin 12 ft. long, a common dolphin 5 ft., as well as a common porpoise, a grey seal and a common seal. A 6 lb. bream, the largest it is believed from Lancashire since the war, was taken by an angler from Eccleston Mere, St. Helens. Although this size has been exceeded once before at the Merz, and at Ellesmere (Shropshire), most of the pre-war haunts of big bream in this area, like Glasson Dock (Lancaster), Knowlton Park, Meols Station and Carr Mill Dam, have yielded much smaller fish since the big boom of 1940 and 1947.

As usual, Merseyside A.S. put on a highly popular stand of many tanks of fish at the Liverpool Show, although with *Jupiter Phyllis* behaving as he did, most visitors found almost the whole showground aquatic.

At Southport Show, the biggest flower show after Chelsea, you never see any fish tanks, but Perry's of Enfield were again awarded a gold medal for their non-competitive exhibit of aquatic plants. This year, there was a further improvement in layout, with a good show of Water-lilies (these, incidentally, have done well locally this season).

Blackpool Show Dispute

BLACKPOOL and Fylde A.S. competed with Bury A.S. in the interclub furnished aquarium class at Blackpool and Fylde A.S. open show. Blackpool's exhibit came first. Fleetwood A.S. disputed the award on the grounds that the fish used had been taken from tanks in the adjoining Blackpool Tower Aquarium just before the show opened, thereby infringing the rule that the fish had to be the property of members of the club for at least 28 days before the date of the show. The show committee decided to withdraw the entry. Bury A.S. were declared the winners.

Fleetwood A.S. pursued the matter by writing to Blackpool on August 4. Blackpool replied on August 7 and intimated its decision to cancel the interclub table show proposed for August 25. Fleetwood considered the reply, convened a meeting for August 31 and at that meeting decided to refer the matter to the Federation of Northern Aquarium Societies.

Each year Blackpool Tower Aquarium disposes of surplus fish to societies and the trade. Black-

pool and Fylde A.S. apparently availed itself of a facility open to any society by ordering a number of Beacons, for display at the show in question and at future interclub events. Did it break the rule by not taking delivery more than 28 days before the show? Could it be claimed that, the fish having been ordered in good time and looked after in the interim by the curator in his capacity of a member of the society, the "letter of the law" had been observed? No doubt these points were borne in mind when the matter was discussed by the F.N.A.S. Council.

Here is an example of the useful purpose a Federation can serve by acting as arbitrator when matters of this nature arise. Despite the wide publicity given to the incident in the daily press, we hope there will be no lasting friction between the two societies. There need not be. Blackpool did right to withdraw the entry and the matter could have rested there but Fleetwood exercised its right to get the position clarified at a higher level. The F.N.A.S. have given a ruling. The incident should now be regarded as closed, the ruling to be taken as a guide for future occasions.

F. B. in Strange Company

DRESS-DESIGNS and a hair-do for the fuller figure and midwifery in the Sudan were the two delectable subjects that preceded a T.V. talk on tropical fish given on September 7 by Mr. Alec Fraser Brunner, F.Z.S., who was described when introduced as a student of fish. The talk was first suggested to the B.B.C. by the Public Relations Committee of the F.B.A.S. WATER LIFE came into the picture when it was asked to suggest a suitable speaker and nominated Mr. Brunner.

F. B., whose hirsute adornment has caused one wag to dub him the "Capt. Kettle of Fishdom", soon overcame a slight hesitancy and settled down to give some useful advice. First he described a furnished aquarium, next demonstrated setting-up a tank, went on to show suitable

aquatics and how to plant them and finally exhibited in succession specimens of livebearers (Swordtails and Mollies), egg-layers (Tiger Barbs), bubble-nesters (Fighters, Gouramis, with a catfish as a scavenger, and an Angel Fish), rounding off his talk by pointing out a newly-imported species of the *Tetraodon* Genus (Puffer Fish). He outlined the apparatus required. Some were a little surprised to hear him say that he did not consider a thermostat necessary.

The programme was introduced by Andrea Troubridge, who cast several hurried glances at the clock as the allotted time was exceeded and Alec F. B. had to look smart in order to go over all the ground he had set out to cover. That he did so was due to the help he received from Mr. J. P. Mitchell, of whom we caught two brief glimpses as the camera swung round focusing on the range of tanks that had been used for the demonstrations.

Boughton Memorial Trophy Appeal for Donations Launched

THE sudden death of Mr. A. H. Boughton, which was announced briefly on page 250 of the August issue, has meant a loss to the organised hobby of a pioneer who, in a quiet, unobtrusive manner, had contributed much towards the formulation of its policy. A successful fishkeeper and breeder for many years, who tried hard as an individual not to be in the limelight, yet ever ready to give others the benefit of his wide experience, he will be remembered by many of the old hands as proprietor in pre-war years of the Artistic Aquaria Co. Post-war, he was closely associated with Singleton Bros. (Instruments) Ltd., manufacturers of "Es-Ex" aquarium apparatus.

Many Interests

He had contacts with aquarists in many countries. In Britain, he worked hard in his spare time to help amateurs in the hobby and, equally enthusiastically, he endeavoured to improve relations between the hobby and the trade. Our sympathy is extended to his wife and children in their bereavement. A founder member of the Fish Culturists' Circle, secretary for a period of the old British Aquarists' Association and a keen supporter of the now defunct Aquarium Trade Guild, he had in recent years linked up with the Aquatic Traders' Association.

It has been suggested by a London club that his memory should be perpetuated by launching an appeal for donations with which to buy a trophy and Mr. A. Fraser-Brunner, F.Z.S., has agreed to make the appeal to the Federations, clubs throughout the country, the trade and individual aquarists and has also undertaken to prepare a design for it. We support this idea and on Mr. Fraser-Brunner's behalf invite all who would like to be associated with this appeal to send their donations to him at his private address which is 11, Bushwood Road, New Guilden, Surrey.

invitation to contribute an article to this journal, his views on Veiltails and, in particular, on the standards advocated for that variety of Goldfish, will be available to a wider circle.

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The Convention was opened by Mr. H. Cadwallader, the chairman, and any feeling of formality went when each participating club party was asked to stand as the roll was called. Out of the numerous affiliations it appeared that only four were not represented. A strong contingent came from Gloucester and Cheltenham A.S.

Among those at the top table were Mr. L. W. Male, secretary, Mr. D. Atterwell, treasurer, Mr. T. L. Dodge, the lecturer's panel convener, Mr. W. L. Mandeville, judges' panel convener, Mr. C. D. Rae, and Mr. E. J. Druce, the last two being members of the committee. In addition to myself non-members present were Mr. Lee, chairman of Belle Vue A.S., who also represented the F.N.A.S. and Mr. D. Risdon, the Zoo's popular General Manager, who welcomed the gathering on behalf of the Dudley Zoological Society.

With the facilities the Zoo can offer and the promising response by members and their families on this first visit to the Zoo I forecast that the M.A.A.S. will soon be holding annual conventions there which will equal if not surpass in size the well supported assemblies at Belle Vue Zoological Gardens that are a feature of the Northern Federation. One day perhaps the Federation of British Aquatic Societies will be encouraged to arrange similar gatherings for aquarists in the south at the London Zoo. It could be done and I think it should.

IT was the clash of the Willesden and Bethnal Green shows that made me miss the September Assembly of the F.B.A.S. I would have liked to be present since the Council gave its views on the discussion in these columns of the need for Novice Classes at shows. It may be thought that the Council's decision to make its opinion known was a little badly timed since the debate continues in this issue and has yet to be summed up. The F.B.A.S. will be invited to send their considered opinion to WATER LIFE for the February 1955 issue and it is to be hoped that the final findings will take into account the opinions of all affiliated clubs which I hope will be voiced by delegates.

(Continued next page)

Aquatic Press Topics

Take Care with Copper Sulphate

THAT insidious invader of fish tanks, Blue-green algae, is possibly the most tenacious and harmful of all the primitive plants. In its extreme form it takes an uninhibited delight in festooning and choking the choicest plants with a deep green blanket and exudes a tell-tale and quite revolting earthy odour. Altogether, an unpleasant customer.

Several treatments have been suggested, including a mixture of acriflavine and sea salt, the introduction of Green algae as the two types seem unable to live in close proximity, and the use of a very weak copper sulphate solution. We have hesitated to recommend this latter chemical in view of the extreme importance of using solutions in really low dilutions. A slight error in estimating the quantity and the result could be not only dead Blue-green algae, but dead plants and fish as well. Concentrations in excess of 2:10,000,000 can prove lethal and Mr. C. van Duijn of Holland gives us the following instructions for its use: "A stock solution of two grams of copper sulphate in one litre of distilled water is made; 10 cu.cms. of the stock solution is added to each 100 litres of aquarium water". He adds that inaccurate dosage can kill the fish so it is advisable to remove them from the affected tank before treatment.

This use of copper sulphate was brought to mind when reading a paper in NATURE (G.B.) headed "Copper Sulphate as an Aquatic Herbicide". The authors, after finding that a canal in the Sudan receiving water containing 1:1,000,000 of copper sulphate contained no water plants or snails in its 9½ kilometre length after eight months, carried out a further experiment giving an initial treatment with 30 p.p.m. of copper sulphate followed by a continuous influx of 2 p.p.m. of the same substance. In eight months the following observations were made. No plants grew nearer than three kilometres downstream from the point of introduction, only *Potamogeton nodosus* grew within 10 kilo-

metres, although at lower points *Najas pectinata* and a little *Chara globularis* were found. Finally, no bilharzia snails were discovered. The scientists conclude by saying that further experiments are being carried out to ascertain if modifications of this method are practicable as a water plant control treatment.

What may be useful in Africa can serve as a warning to us amateur aquarists: as little as one part or two parts per million of copper sulphate can have a disturbing effect on aquatic flora and fauna so if this compound is issued for Blue-green algae control just remember—take it easy.

DEADLY *Dytiscus marginalis*, the Great Diving Beetle, can take its toll of fish in an outside pond. It is not easy to catch and the only effective way is with a net when it comes to the water surface for air. In the NEW ZEALAND AQUATIC WORLD Mr. L. Jackson describes a trap which has



Photograph [J. Clegg, F.R.M.S.]
Female Great Diving Beetle (*Dytiscus marginalis*) breathing at the water surface.

proved effective in his own pool. His wife had the idea of making a few holes, with a ¼ in. screwdriver, about an inch from the bottom of a tin can. The holes were thus smooth on the outside, making the entry of the beetles easy, and sharp and ragged on the inside, making their escape difficult. A piece of raw meat was placed in the centre of the bottom of the tin and the top of the can was covered with muslin held in place with an elastic band. The apparatus was then submerged in the pool. Beetles attracted by the meat entered the can, and drowned when they had no access to the water surface. Proof of the efficacy of this simple gadget is shown in Mr. Jackson's report where he says that over 20 *Dytiscus* were caught in the first day—more than half of them drowned.

Meat is now off ration so we can take a sliver off the joint without a troublesome conscience, but don't keep the same piece in the can for more than one day, otherwise there is a strong likelihood of water pollution.

IN our interest in elderly tropical fishes (see this column for June and August) we must confess not to have considered previously the fishes' contours. If they

lived to a ripe old age we have not enquired whether they displayed elderly rotundity or whether they showed that unhappily named condition known as "hollow-belly". Now up comes a Zebra Fish (almost four years old—might we whisper that it is a female?) with the proud distinction of carrying off a fourth prize in a class for Danios in the June 3 table show of Hendon A.S. Its owner, Mr. A. F. Baldock, does not suggest that the standard of the exhibits was particularly high but anyone who has kept Zebras knows that, generally speaking, their motto seems to be a shortish life but a lively one. After two years they tend to have either heavily developed underparts or a vaguely emaciated appearance. In both cases their department suffers and they are past their showing—even table-showing—days.

Our correspondent says that his fish has a rotund body but that it is not developed to an extent beyond that generally observed in females of the species. Main point which gives away its age is a convex curvature to the upper body profile between the dorsal and the caudal fins.

Mr. Baldock's specimen reflects credit on its owner who has had it in his possession for almost three years. There must be few Zebras capable of holding their own in a class of 12 when approaching four years of age. Congratulations, m'lady.

In and Around the
Aquaria World

(Continued from page 248)

IT was with regret I learned that soon after the National Aquarists Society's show in June, its treasurer went sick and had to spend some weeks at home. Mr. F. G. Odams is one of those men who work hard without any fuss and so get things done quickly. His very conscientiousness makes him most concerned when the society's progress suffers a setback and I may not be very far from the truth when I suggest that his indisposition was largely the result of his worrying when the 1954 show faced unexpected difficulties which, fortunately, Mr. Odams and his fellow councillors managed to overcome. The illness caused an understandable slight delay in the accounts for the show being presented but by now the members are aware of the position. Considering the extra expense the society was involved in this time, the figures are not so bad as some had feared.

DETAILS were given, in this column in the last issue, of the proposed public aquarium in Durban, South Africa. Reference to the scheme appears in a recent issue of *Nature* where Mr. R. Clarke of the National Institute of Oceanography reports on the work done by the South African Association of Marine Biological Research. He confirms that much good research can be carried out in the waters off the east coast of Africa and explains that, whereas, on a number of tropical seaboard government sponsored stations have been set up, this combined research centre and public aquarium will only be built if enough money is forthcoming in the way of private subscriptions. It will be a great pity if through lack of official backing any delay to the scheme occurs.

From Continental Journals

Breeding the Fruit Fly

MR. U. Emmert, in an article in the January issue of DATZ (Germany), described the breeding of the little fruit fly, *Drosophila melanogaster*—which is so well known to all biologists—as a food for Tooth-carps, Characins and Barbs. The fruit fly is very easily bred. Emmert breeds them in small glass jars in a gruel made of semolina or cornflour which covers the bottom of the jar to a depth of 1-2 in. An object on which the flies can rest has to be added and the jars should have close-fitting lids although they should not be airtight.

The best breeding temperature is 72-76 deg. F. Five small cultures will produce some 300 flies daily. The flies are fed to the fish by just dropping them into the tanks. Sprinkling them with water will help the fish to pick them up. These little fruit flies form a very good food which is readily available all through the winter.—H. O. MUNRO.

News from the North-west

Carlisle Society Prepares Interesting Winter Programme

MOST of us were very concerned one August morning when we opened our newspaper to see that a dispute between Fleetwood A.S. and Blackpool & Fylde A.S., their nearest neighbours, had "hit the headlines". When quarrels between local societies are read in the press circulating far outside the area, as happened this time, much harm can be done to the hobby. In future years, the Blackpool affair will no doubt be regarded as a "storm in a fish-tank", as a well-known Fylde authority put it to me. Personally, I think the protest was in order, but that the position was exaggerated once it was reported by the national newspapers. Furthermore, even 28 days is far too brief a period of ownership to merit an award. Non-competitive classes should cover recently acquired fish.

I found a very happy and friendly state of affairs amongst the officials of the Carlisle and District A.S. when I was again in the Border city recently. It was in January 1952 that a gathering of 30 supporters met at the King's Head Hotel to form this society, following Mr. Armstrong's appeal for support. They held their first meeting in the Y.M.C.A. Lounge the following month, electing Mr. W. T. B. Routledge as chairman and Mr. S. Crosby, secretary. Now, with Mr. E. Simpson bearing the secretarial pen, there are some 70 members and prospects of several more.

They meet the last Thursday of the month (not the first, as stated incorrectly recently). Charting with two officials, I learned that at least 16 of their founder-members are still with them, and all told, the society now numbers about 80 tanks. I can certainly recommend the society to the fishkeepers in the area who have not yet given their support. The society's officials are very keen to overcome the difficulties of a city isolated by miles of mountains from other towns which otherwise would help out at their shows and meetings. Points are awarded to all winners at their shows and, at the end of the year, the highest aggregates in the cold and tropical

sections receive certificates and prizes from the committee. Some of the plans for this Autumn and Winter, following the last table show of the year in October include a quiz in November with Mr. E. Hardisty (hon. vice-president and a foundation member) in the chair, and a film show in December.

A "best home tank" contest will be judged by a panel of members. Next year the Society hopes to run a fish show with the Cumberland Horticultural Society's flower show in the local market, and the committee is trying to keep in touch with the Dumfries and Workington societies, despite the distances they are apart. The secretary's address is 51 Prescott Road, Longsowerby, Carlisle.



Prominent in Liverpool business circles, Mr. P. G. Garlick is also well-known as an aquarist. He is a member of Merseyside A.S. and chairman of the local Naturalists' Association. He keeps several tropical fish tanks at his home in Birkenhead.

Marine aquaria are not so commonly kept in the north-west as they were in the Victorian hey-day of Sir William Herdman, the pioneer of marine biology in these parts. Many amateur aquarists whose special interest lies in plants will, however, envy the tank of seaweed now under cultivation by Dr. E. M. Burrows, lady lecturer in botany at Liverpool University, who recently went there from Australia. This is believed to be the only tank of its kind in the country. Working with another woman botanist, Dr.

S. M. Lodge, of the Marine aquarium at Port Erin (which you may visit when on holiday in the Isle of Man), she has obtained strong evidence that hybrids occur between seaweed species. Crosses between pairs of three different species are being grown in the tank in the Marine Laboratories, Liverpool.

Seaweed "eggs" are placed in a culture solution made up in sea water and then fertilised. When sufficiently grown to be recognised, the sporophytes are planted on stones fixed to the rocks in littoral zones on the Anglesey coast, to mature in their natural environment. A second tank is being built for studying the plants under alternative conditions, and Dr. Burrows is also using the tank to study the life histories of algae which form the green weeds in the Mersey and other rivers, and to determine how they migrate up-river.

Here's something you can't put in your marine aquarium! In the last twelve months there have been stranded on the south Lancashire coast two live bottle-nosed whales of 21 ft. and 25 ft., one dead lesser orca of 32 ft., a bottle-nosed dolphin 12 ft. long, a common dolphin 5 ft., as well as a common porpoise, a grey seal and a common seal. A 6 lb. bream, the largest it is believed from Lancashire since the war, was taken by an angler from Eccleston Mere, St. Helens. Although this size has been exceeded once before at the Merz, and at Ellesmere (Shropshire), most of the pre-war haunts of big bream in this area, like Glasson Dock (Lancaster), Knowlton Park, Meols Station and Carr Mill Dam, have yielded much smaller fish since the big boom of 1940 and 1947.

As usual, Merseyside A.S. put on a highly popular stand of many tanks of fish at the Liverpool Show, although with *Jupiter Phyllis* behaving as he did, most visitors found almost the whole showground aquatic.

At Southport Show, the biggest flower show after Chelsea, you never see any fish tanks, but Perry's of Enfield were again awarded a gold medal for their non-competitive exhibit of aquatic plants. This year, there was a further improvement in layout, with a good show of Water-lilies (these, incidentally, have done well locally this season).

Blackpool Show Dispute

BLACKPOOL and Fylde A.S. competed with Bury A.S. in the interclub furnished aquarium class at Blackpool and Fylde A.S. open show. Blackpool's exhibit came first. Fleetwood A.S. disputed the award on the grounds that the fish used had been taken from tanks in the adjoining Blackpool Tower Aquarium just before the show opened, thereby infringing the rule that the fish had to be the property of members of the club for at least 28 days before the date of the show. The show committee decided to withdraw the entry. Bury A.S. were declared the winners.

Fleetwood A.S. pursued the matter by writing to Blackpool on August 4. Blackpool replied on August 7 and intimated its decision to cancel the interclub table show proposed for August 25. Fleetwood considered the reply, convened a meeting for August 31 and at that meeting decided to refer the matter to the Federation of Northern Aquarium Societies.

Each year Blackpool Tower Aquarium disposes of surplus fish to societies and the trade. Black-

pool and Fylde A.S. apparently availed itself of a facility open to any society by ordering a number of Beacons, for display at the show in question and at future interclub events. Did it break the rule by not taking delivery more than 28 days before the show? Could it be claimed that, the fish having been ordered in good time and looked after in the interim by the curator in his capacity of a member of the society, the "letter of the law" had been observed? No doubt these points were borne in mind when the matter was discussed by the F.N.A.S. Council.

Here is an example of the useful purpose a Federation can serve by acting as arbitrator when matters of this nature arise. Despite the wide publicity given to the incident in the daily press, we hope there will be no lasting friction between the two societies. There need not be. Blackpool did right to withdraw the entry and the matter could have rested there but Fleetwood exercised its right to get the position clarified at a higher level. The F.N.A.S. have given a ruling. The incident should now be regarded as closed, the ruling to be taken as a guide for future occasions.

F. B. in Strange Company

DRESS-DESIGNS and a hair-do for the fuller figure and midwifery in the Sudan were the two delectable subjects that preceded a T.V. talk on tropical fish given on September 7 by Mr. Alec Fraser Brunner, F.Z.S., who was described when introduced as a student of fish. The talk was first suggested to the B.B.C. by the Public Relations Committee of the F.B.A.S. WATER LIFE came into the picture when it was asked to suggest a suitable speaker and nominated Mr. Brunner.

F. B., whose hirsute adornment has caused one wag to dub him the "Capt. Kettle of Fishdom", soon overcame a slight hesitancy and settled down to give some useful advice. First he described a furnished aquarium, next demonstrated setting-up a tank, went on to show suitable

aquatics and how to plant them and finally exhibited in succession specimens of livebearers (Swordtails and Mollies), egg-layers (Tiger Barbs), bubble-nesters (Fighters, Gouramis, with a catfish as a scavenger, and an Angel Fish), rounding off his talk by pointing out a newly-imported species of the *Tetraodon* Genus (Puffer Fish). He outlined the apparatus required. Some were a little surprised to hear him say that he did not consider a thermostat necessary.

The programme was introduced by Andrea Troubridge, who cast several hurried glances at the clock as the allotted time was exceeded and Alec F. B. had to look smart in order to go over all the ground he had set out to cover. That he did so was due to the help he received from Mr. J. P. Mitchell, of whom we caught two brief glimpses as the camera swung round focusing on the range of tanks that had been used for the demonstrations.

Boughton Memorial Trophy Appeal for Donations Launched

THE sudden death of Mr. A. H. Boughton, which was announced briefly on page 250 of the August issue, has meant a loss to the organised hobby of a pioneer who, in a quiet, unobtrusive manner, had contributed much towards the formulation of its policy. A successful fishkeeper and breeder for many years, who tried hard as an individual not to be in the limelight, yet ever ready to give others the benefit of his wide experience, he will be remembered by many of the old hands as proprietor in pre-war years of the Artistic Aquaria Co. Post-war, he was closely associated with Singleton Bros. (Instruments) Ltd., manufacturers of "Es-Ex" aquarium apparatus.

Many Interests

He had contacts with aquarists in many countries. In Britain, he worked hard in his spare time to help amateurs in the hobby and, equally enthusiastically, he endeavoured to improve relations between the hobby and the trade. Our sympathy is extended to his wife and children in their bereavement. A founder member of the Fish Culturists' Circle, secretary for a period of the old British Aquarists' Association and a keen supporter of the now defunct Aquarium Trade Guild, he had in recent years linked up with the Aquatic Traders' Association.

It has been suggested by a London club that his memory should be perpetuated by launching an appeal for donations with which to buy a trophy and Mr. A. Fraser-Brunner, F.Z.S., has agreed to make the appeal to the Federations, clubs throughout the country, the trade and individual aquarists and has also undertaken to prepare a design for it. We support this idea and on Mr. Fraser-Brunner's behalf invite all who would like to be associated with this appeal to send their donations to him at his private address which is 11, Bushwood Road, New Guilden, Surrey.

Pond Manuring and Fertilising

THOSE interested in increasing the sizes of fish in large ponds may not be aware of the extent to which we have advanced in inducing an improved rate of growth through the judicious use of different types of manure or fertiliser to boost the supply of food on which the fish live.

First prepared in 1940, Dr. C. H. Mortimer's abstracts of literature on pond manuring and fertilisation have been edited and made more comprehensive by Dr. C. F. Hickling. The review and bibliography are published by H.M.S.O. and provide the serious student of freshwater fish culture with a wealth of information.

The review covers experiments carried out in Europe, North America and in the Near and Far East. References are made to lime, chalk, limestone, potassium, phosphate and nitrogenous fertilisers and to organic manures. There are chapters on the effect of manures on fish food and of fertilisers on fish, with notes on the causes of de-oxygenation in the water.

It is possible that the practices followed with considerable success at establishments where freshwater fishes are cultivated for human consumption could be employed in a modified form by those who breed fish for pleasure in ponds, if the ponds are not of too small a capacity. The addition of controlled quantities of suitable chemicals or organic manure might work wonders in providing the right sustenance for fry and so reduce the rate of mortality usually highest at that period.

The review, a Colonial Office Fishery Publication: No. 5, 1954, "Fertilisers in Fishponds", is published at 25/- net. The original compiler and his colleague are, respectively, C. H. Mortimer, D.Sc., of the Freshwater Biological Association, and C. F. Hickling, C.M.G., Sc.D., Fisheries Adviser to the Secretary of State for the Colonies.

First-Aid Service for Fish

TWENTYFOUR-HOUR first-aid service for fish—that is the latest innovation of Dublin's Society of Aquarists.

The idea started when committee members of the society offered to share S.O.S. calls received by their secretary, Mrs. Elizabeth Spurling Jewell, from members worried about their pets.

With over 100 varieties of tropical and cold-water fish in the tanks of the society's sixty members, calls—especially from beginners—for the free first-aid service are many and frequent.

Functions of the Aqua Ring

FOR some time, three South London Clubs, namely Pisces A.C. (Dulwich), Lambeth A.S. and Forest Hill A.S. had co-operated one with the other on many subjects such as quiz programmes, lectures, visits, etc., all of which tended to provide a close association. The secretaries began to realise that, for even better results, it would be worth while examining the possibilities of an organisation, not as a rival to any existing associations but rather to strengthen such and lighten the load placed upon them. A meeting of the secretaries and show secretaries was arranged and from that gathering emerged the group, tentatively named "The Aqua Ring", working through the Secretaries' Committee. One of the first decisions to be taken was that membership be restricted, not to freeze out neighbours but because observation of other organisations seemed to stress the need for fixed horizons.

It is appreciated that such co-operation takes place all over the country without any kind of organisation being required, therefore it may be asked "Why go to all the trouble?" The main reason is that, no matter how advantageous may be ordinary inter-club events, there are many items which need closer collaboration. As an instance of this, the Group has prepared a Breeders' List for circulation to all members, an Experts' List on which appear the names of such as carpenters, welders, electricians, printers, typists, engravers, drivers, silversmiths, etc., i.e. people whose talents and trades may not directly concern fishkeeping but who are often

Special Announcement

WATER LIFE SHOW, 1955

The next WATER LIFE SHOW will again form part of the National Exhibition of Cage Birds and Aquaria at the National Hall, Olympia, London, W.14 on:—

January 6-7-8

Classification

Cl. A1. Interclub Tropical Furnished Aquarium	Entry fee
Cl. A2. Interclub Coldwater Furnished Aquarium	5/- per tank
Cl. A3. Individual Tropical Furnished Aquarium	Entry fee
Cl. A4. Individual Coldwater Furnished Aquarium	2/- per tank
Cl. A5. Interschools Furnished Aquarium (Open to schools in L.C.C. Educational area)	No entry fee
Cl. A6. Breeders' Class, Singletail Goldfish (Teams of four fish bred on or after January 1st, 1954. Eligible varieties: Common Goldfish, Comet, Shubunkin)	Entry fee 2/- per Team
Cl. A7. Breeders' Class, Doubletail Goldfish (Teams of four fish bred on or after January 1st, 1954. Eligible varieties: Fantail, Veiltail, including telescopic eyed forms of the two foregoing varieties, Moor, Lion- head, Oranda)	
Cl. A8. Breeders' Class, Tropical Livebearers (Teams of six fish bred on or after January 1st, 1954)	
Cl. A9. Breeders' Class, Tropical Eglayers (Teams of six fish bred on or after January 1st, 1954)	

Trophies and Prizes

WATER LIFE Trophy for the best Club Furnished Aquarium
(Previous winners: Enterprise A.S., W. Middlesex A.S., Stoke Newington A.S.)
F.B.A.S. Junior Trophy for best entry in Interschools Class.
Awards of Merit in all classes with WATER LIFE Diplomas to runners-up.
Cash Prizes: Cls. A1, A2 and A5, 1st £2 2 0; 2nd £1 1 0; 3rd 10/6d.
Cls. A3, A4, A6-A9—1st £1 1 0; 2nd 10/6d.; 3rd 5/-.

Additional Attractions

Traders' Class. Arrangements are being made to stage a special class for professional aquarists of furnished aquariums.

Specialist Clubs' Displays. As in past years, the show is being supported not only by the Federation of British Aquatic Societies (who will stage a display and will provide the judges) but also by the Goldfish Society of Great Britain, the Federation of Guppy Breeders' Societies and the London Group of the British Herpetological Society.

Veiltail Challenge Class

In addition to a display of an educational nature, the Goldfish Society of Great Britain invites all clubs to compete with them in staging the best Veiltail, to be judged by F.B.A.S. standards.

Guppy Societies' Competition

The Federation of Guppy Breeders' Societies are to hold an inter-club competition with teams from all affiliated societies and sections. It is also hoped to stage some Guppies from overseas, including America and the Continent.

Herpetological Display

Members of the London Group of the British Herpetological Society will stage a non-competitive show of reptiles and amphibians.

Other attractive features are being planned. All clubs and past exhibitors have been sent a preliminary notice. Further details and schedules, complete with the rules and regulations, will be posted shortly. Final details will appear in the next issue.

Entries close TUESDAY, December 14th.

If you or your club wishes to enter, but you have not received the preliminary notice, send for a copy of the schedule to The Section Organiser, WATER LIFE Show, Dorset House, Stamford Street, London, S.E.1.

needed during the operation of club life. A Speakers' List provides secretaries with the names of those able to talk for ten minutes or so but not for a full lecture period. A Judges' List helps to fill the gap in emergencies. Yet another list will detail equipment available on loan such as episcopes, tanks, pumps and microscopes.

The most recent activity has been a joint home furnished aquaria competition and several other projects are on hand. What else? An inter-club show, an exhibition, breeders' courses, newsletters, honorary memberships, an inter-club library and many more ideas come to mind.

Certain rules have been drawn up to safeguard the future but like most rules these are kept in the background and so far are forgotten. Time will tell if the organisation can succeed but after about twelve months' experience it does seem that much may be accomplished. Suggestions and requests for information will willingly be received and answered by the Group Secretary, Mr. E. E. Young of 8, Beauval Road, S.E.22, who is himself a co-founder of Pisces A.C.

Odd Black Mollie

AMONG a consignment of Black Mollies received by Mr. J. Marks (Exotictrade, London) was one of strange appearance. The fish was, in all except one respect, a perfectly normal 2 in. long specimen but on its belly was an outgrowth—apparently not pathological. This round extension, approximately $\frac{1}{8}$ in. in diameter, was situated on the underside of the fish beneath the pectoral fins. On the upper forward edge of the development were two small extensions and to the upper rear edge, two large extensions. The latter, particularly, had the appearance of an auxiliary pair of fins, in fact they looked like a second pair of pelvics and were moved independently. If this supposition proves correct the forward extensions might be vestigial pectorals. It is hoped to have the Mollie examined and dissected so that the nature of the unusual appendage can be ascertained for the fish did not seem to be inconvenienced in any way by its presence.

Germany Stages First International Guppy Exhibition

British Team Leads with Most Points

AT Hanover, Western Germany, the German Federation, Verbandes Deutscher Vereine für Aquarien- und Terrarienkunde (V.D.A.) staged the first ever international all-comers Guppy show, from September 1-6. The exhibits of Guppy breeders from Austria, Switzerland, Great Britain, Germany, Holland and the United States were staged in teams of three.

Judging was to a combination of British and Continental standards, thus allowing for our Federation of Guppy Breeders' Societies' approval of shapes in finnage but Continental pointing for colour. The three judges, Messrs. St. Blas (Holland), H. Boos and O. Witt (Germany) used the method of three adjudicators per class, and not a single judge, as is normal in this country.

The number of entries was smaller than expected, particularly since the organisers had agreed to return exhibits by air immediately after the show, they paying all expenses. The lack of numbers was possibly due to the fact that the V.D.A. were late in notifying prospective exhibitors of details of the show. For instance, the invitation to Great Britain to participate was received one week prior to the closing date for entries so that only a few F.G.B.S. breeders



General view of the entries with, top left, the Doubleword trio which gained an award for Mr. D. Johnson (Eastern Counties, Great Britain).

could be contacted in time to enter the event.

The awards were much as anticipated in London, main classes of interest being for Veiltails, Scarftails, and Doublewords. It was hoped that the British and American Guppy breeders would at last meet on level terms and that some definite result would transpire; unfortunately this was not to be. Paul Hähnel, one of America's leading Guppy breeders, was virtually unopposed in the Veiltail class. It was a great pity, after all that has been heard about British Veiltails, that the only team from this country was little more than four months old. Hähnel's Veiltails were the best in the show, 1st gaining maximum 30 pt. rating, second and third awards, also to Hähnel, being rated at over 29 pts. The Scarftail class was to have been the next testing ground but here the British team, represented by W. Howe (South London G.B.S.), provided the only exhibit and so gained a "walkover".

In the biggest class of the show D. Johnson (Eastern Counties, G.B.S.) was the only British exhibitor with a team of three Doublewords. These came out on top against sixteen exhibitors from Germany, Holland and Austria. It is understood that Doublewords the like of these have never been seen in Germany before, and special congratulations were sent by the organisers on this fine win with 28.66 pts.; prize for second place were B. Horak (Austria) and F. Abraschek (Austria) with 27.33 pts., and third was an entry of the Haarlem Club (Holland) with 27 pts.

The biggest surprise of the day came when L. Schikirsch, Austrian ace breeder, gained first (28 pts.) to beat Mrs. H. White (Eastern Counties, G.B.) 26.66 pts. into second place, and N. Pearson (South London, G.B.) into third place with Speartails. The latter gained 26.33 pts. Lyretails, once the pride of Great Britain, were exhibited by Austria, Germany, Holland, and Switzerland. Herr Schikirsch (Austria) gained the first award (28.66 pts.). Two teams tied for second place, both entries coming from the Dutch Haarlem Club and scoring 28 pts. For Germany, Dr. Stoerzacher of Berlin won 1st and 2nd awards in the Roundtail class. These scored 28 and 27 pts. respectively.

Summing up, both the British and the U.S.A.



Messrs. St. Blas, Boos and Witt, the three judges debate, with an official, the merits of the winning Lyretail exhibited by Mr. L. Schikirsch (Austria).

exhibits did no more than was expected of them. Austria have come out of this show proving that so far as Guppy breeding is concerned they are a force to be reckoned with in the immediate future. The Netherlands are improving but we hope to hear better things from them next year, as also from Switzerland. Germany, the hosts, had a good run and there are indications that their pre-war greatness in the aquaria world will return one day. In the meantime, we thank them for the first international competition.

Points Analysis

Country	Exhibits	1st	2nd	3rd	Pts.
G.I. BRITAIN	5	2	1	1	23
AUSTRIA	14	2	1*	0	22
U.S.A.	4	1	1	1	9
GERMANY	12	1	1	0	7
HOLLAND	4	0	1*	1	7
SWITZERLAND	1	0	0	0	0

*Shared second awards.

The Lyretails and Doublewords belonging to L. Schikirsch and B. Horak, both of Austria, have now arrived in London and will be competing against the Rest of Great Britain (Guppy breeders other than those affiliated to the F.G.B.S.) at the F.G.B.S. Annual Cup Competition to be held at the London Zoo on October 2. It is hoped that they will remain in Great Britain until after the WATER LIFE Show at Olympia in January.

F.B.A.S. Delegates Present at Belgian Congress

BRITAIN was represented by Mr. C. W. G. Creed (deputising for Mr. P. S. Campkin) and Mr. Fraser Brunner at the Congress held in September at Antwerp Zoo by the Belgian Federation of Aquarium and Terrarium Clubs. This was one of the series of Continental gatherings that have taken place in Luxembourg and Germany (both reported on this page) and, earlier, in Holland.

On the first day, Mr. A. Dubois, chairman of the Federation received the delegates who were then welcomed by Mr. W. Vandenberghe, director of the Royal Society of Zoology, after which a party took place in the Zoo's Summer House.

Next day, the assembly was addressed by Mr. F. Brans, chairman, and the committee, of the Antwerp Fraternity of Aquarists who were largely responsible for the event. Later the delegates were taken round the Wonderland exhibition. A formal dinner at which the Antwerp Fraternity were the hosts was followed by a discussion period and a talk on vertebrates by Dr. M. Poll, conservator of the Colonial Museum at Tervueren. Sunday's programme included a talk by the leading German delegate, a visit to the Town Hall, with a reception by the Mayor, a film session and a general conference at which the delegates gave short talks on the state of the hobby in their respective countries. An interesting colour film entitled "Our Aquarium Fishes" was presented by Messrs. Carels and Wante.

The Conference ended with an informal entertainment at the Cafe Nocturne. It was fitting that Great Britain should be represented on this occasion since it was Mr. Fraser Brunner who first mooted the formation of the World Union of Aquarists on the committee of which

Mr. Campkin is the official British delegate. The object of the Union is to exchange information on our hobby on an international scale and although, at present, the congresses that have been held have been confined to Europe, it is hoped in time to arrange gatherings to which America and other countries will be able to send representatives.

Conference at Kassel

A FOUR-DAY congress was held at Kassel under the auspices of the German aquarists' federation in September. Delegates from several countries attended, first assembling on the

Friday evening to be introduced and to take part in an informal discussion. The programme for the next two days was a very full one, the timetable starting early in the morning with sessions going on to late in the evening. Included in it were talks and demonstrations by Messrs. H. S. Oskam, Amsterdam ("The Aquarium Hobby in Holland"), Paul Jacobsen, Stockholm, J. Grosse and H. W. Tusche, Hanover, A. Dubois, Antwerp, Dr. Reichenbach-Klinke (on tuberculosis in fish) and Professor Mertens, Frankfurt (reptiles in South-west Africa). Venues included the Hotel Hessenland and the Amerikahaus. On the fourth day, visits were made to local places of interest including the Edersee and the castle at Wilhelmsthal.

Five European Countries Represented at Luxembourg

REPRESENTATIVES from four European countries, five if the Saar is recognised as a separate entity, joined those of the Grand Duchy in a congress convened by Luxembourg Federation of Aquarists a short while ago. The proceedings were under the chairmanship of Dr. R. de Bingerbruck, those present, in addition to leading Luxembourgian fishkeepers, being Messrs. Copsin and Dubois of Belgium, Mr. and Mrs. Rothenbourger of France, Dr. Meder, Messrs. Anthes, Meyer and Pohlman of Germany, Messrs. Oskam, Prager and Schenieder of Holland and Mr. Feigs representing the Saar.

The visiting delegates were first received by Mr. P. Simonis, honorary President of the Luxembourg Federation. Several interesting exchanges of information were arranged. Outstanding sessions were those at which Mr. Pohlman displayed a series of colour transparencies of aquatic plants; Mr. Anthes dealt with modern aspects of biology, referring to work in schools, including the study of amphibians and reptiles, and describing his subject with coloured slides.

Mr. H. C. Oskam, Editor of *HET AQUARIUM* gave details of the hobby in the Netherlands, where the *Nederlandsche Bond* has over 30,000 members, and went on to talk about furnishing and setting-up aquaria, a subject on which Dr. Meder enlarged. Mr. Oskam showed colour photographs and Dr. Meder spoke about his coloured transparencies showing aquarium varieties. Mr. Copsin, Editor of *NOTRE AQUARIUM* analysed typical problems that confront fishkeepers on thermostat control, the value of temperature regulation, sources of illumination and biological equilibrium. There was an informal session outside the Cafe Josy Mersch, where the delegates discussed the state of the hobby in their different countries whilst enjoying light refreshments.

Fishkeeping in Luxembourg is a popular pastime. In the town of Luxembourg, capital of the Grand Duchy, there are over 300 members of the local club, a commendable number for the total population of the town and its environs does not exceed 65,000.

Show Reports

Continued Progress at Birmingham

Outstanding Nymph Goldfish Leads in Strong Coldwater Classes

EACH post-war show of the Midland A. & P.S. has been an improvement on the last and the 1954 exhibition staged in the Minor Hall, Bingley Hall, Birmingham, was no exception. The policy of the organisers has been to use any profits made at the shows to purchase tanks and equipment for future events and they are now reaping the benefit. When empty, the hall presents a drab appearance, but the traders' displays and the rows of tanks in the competitive classes transformed it once again from August 26 to 28. The show committee, with Mr. W. E. Barrett as President and Mr. C. D. Roe as show secretary, had the support of the executive committee under the chairmanship of Mr. W. L. Mandeville, its secretary being Mr. T. L. Dodge who has in the past held the show secretarial reins. The judges were Messrs. T. L. Dodge, J. Graham-Keys and E. A. Mason in the cold-water classes and Messrs. E. Bagnall, A. A. Beardsley and W. V. Jones in the tropical classes. They were assisted by Messrs. D. A. Attewell and R. Marshall. All members of the panel are accredited judges of the Midland Association of Aquarists' Societies. Judging was carried out to F.B.A.S. standards but the points scale adopted was that approved by the M.A.A.S.

SPECIAL PRIZEWINNERS

Special prizewinners:—M.A.P.S. members' championship cup, most points, C. D. Roe (41); Evereden cup, best coldwater fish, Z. Webb (Nymph); Graham-Keys cup, best Veiltail, R. B. Raven (Scaled); Keeling cup, best 1954 Veiltail bred by exhibitor, I. Sutton (Calico). Rowatt cup, best 1954 Shubunkin bred by exhibitor, R. Osenham. Taylor cup, best Shubunkin, H. R. Stone; Webb cup, best Novice coldwater fish, K. C. Juson (Calico Veiltail); Cadby cup, best M.A.P.S. member's Shubunkin, R. Osenham. M.A.P.S. Shield, best interclub coldwater furnished aquarium, M.A.P.S.; WATER LIFE cup, best individual coldwater furnished aquarium, G. Phillips. W. V. Jones cup, best Characin, F. Jennings (*Pachibrycon unifasciatus*); Capener cup, best Cichlid entry, F. E. Woodhall (breeder's team of *Apistogramma ramirezi*); Mrs. Gilbert cup, best Anabantid, C. D. Roe, *Colisa fasciata*; Colman cup, best Pecciliid entry, C. D. Roe (breeder's team of Red Swordtails); T. G. Sutton cup, best M.A.P.S. member's Guppy entry, H. Smith (Veiltails); Dodge cup, best *Cyprinoid* entry, F. Jennings (*Barbus titteya*); Tankard, best novice tropical entry, G. Griffiths, *Mollinnesia nilifera*; Gilbert cup, best tropical fish, J. J. Brady, (*Jordanella florida*); M.A.P.S. shield, best tropical furnished aquarium, Walsall A.S.

STRONG COLDWATER CLASSES

In the class for Common Goldfish and Comets, V. E. Capaldi's Common led with 74 points. The coldwater breeders' class was headed by I. Sutton's well developed Veiltails (71 points), closely followed by C. D. Roe's Fantails (70 points). The Shubunkin classes appeared to be pointed rather low, that for adult fish being headed by H. R. Stone's shapely specimen with 69 points, followed by Z. Webb's old-stager now nearing the 5 in. body length (68 points). The open 1954 class went to a promising Bristol type shown by D. S. Paul (66 points), and in the 1954 class, for members only, a Bristol type came first with 69 points shown by R. Osenham. The class for two matched fishes was won by H. J. Whiting (76 points) and that for novices by K. C. Juson with 69 points. The members' class went to R. Osenham (71 points). Three different judges placed the awards in the three main Veiltail classes, that for scaled specimens being a little generously pointed and those for Calicos seemingly a trifle downpointed. Adult Calico Veiltails were led by Z. Webb's round-bodied exhibit carrying good finnage and well worth its 84 points. 1954 Calico Veils. were led by I. Sutton, first 68 and second 63 points, two shapely fish beating the third winner on body shape. With a team of six out of nine entries R. B. Raven gained first, second, third and fourth in the Scaled Veiltail class, the leader well ahead on

colour, earning 80 points, the runners-up getting 74 and 73. The novice class was won by K. C. Juson (70 points). Eleven entries were received in the class for Orandas and Lionheads, C. D. Roe came first and second with a Lionhead (74 points) and an Oranda (70 points). Another Oranda owned by R. B. Raven (69 points) came third. W. Butler's Moons came first and second in their class with 79 and 77 points closely followed by Z. Webb's (76 points). Shape and finnage were almost equal, the winner leading on colour. The large, fully developed Nymph owned by Z. Webb, which took the section cup, headed the A.O.V. Goldfish class with 81 points. A shapely red Scaled Fantail was given 57 points to win the junior class for Miss S. M. Raven, whose Calico Veiltail (55 points) came third and Moor, v.h.c. The second award went to R. L. Male's Common Goldfish (56 points). The quality of the coldwater furnished aquaria classes was not very high. G. Phillips came first in the individual class with 67 points, two rather large Shubunkins looking out of proportion in an otherwise reasonably well set up tank. Only two societies competed in the interclub class, first and second prizes going to the M.A.P.S., the

for A.O.S. produced the winner of the premier award a large and well marked *Jordanella florida* awarded 82 points for J. J. Brady; the runner-up in this class was F. Holloway's *Aphyosemion australe*. The breeders' teams of egg-layers included some well matched fish, F. E. Woodhall's *A. ramirezi* (81 points) leading, followed by R. V. Noble's Fighters (80 points), each showing a good colour and fin development and D. Handley's *Trichogaster leeri* (78 points) good for size and placing. Of the livebearer teams, the red Swordtails shown by C. D. Roe (81 points) and the Black Mollies by F. H. Sutton (80 points) were hard to separate. Some good quality was seen in the breeders' class for Guppies open to West Midlands G.B.S. members. First were Veiltails owned by Dr. C. W. Cole, who also staged the third prize winning team. Second were six well matched Double-swords entered by F. E. Pask. Five novice classes were put on for tropicals. They were won by G. Griffiths, with a *Copeina gattusa* (77 points), in the Characin class, the same exhibitor winning the class for Danios with a *D. malabaricus* (69 points) and the livebearer class with *Velifera mollis*. The class for Barbs was headed by R. C. Minns with a *B. conchodus* (72 points), and that for Anabantids by R. V. Noble with a *T. leeri* (73 points). Eight entries of reasonable standard in the individual tropical furnished aquarium class were headed by D. Handley's effort with 72 points, the inter-society award going to Walsall (73 points) followed by Burton (73) and the M.A.P.S. (69).

WATER LIFE Diplomas at this event were awarded to the promoting Society and Walsall A.S. for the best exhibits in the interclub furnished aquaria classes, cold-water and tropical, respectively.

INDIVIDUALITY!

Not only are entries falling off in the classes for furnished aquaria but now our cartoonist has his own ideas on the whole subject of setting up a tank!



leading tank being well ahead of the other two exhibits. This class deserves a higher standard and better support from clubs in the area.

TROPICAL FISH SECTION

Outstanding among the Barbs was F. Jennings' *B. titteya* (76 points) and J. J. Brady's *B. nigrofasciatus* (75 points) and *B. conchodus* (71 points). A White Cloud Mountain Minnow shown by F. T. Rooke (71 points) followed by a *Brachydanio rerio* bred by F. Jennings (70 points) led a strong class. The Characins on show were of good order, particularly F. Jennings' *P. unifasciatus*, F. H. Sutton's *Hemigrammus ocellifer* and L. Naylor's *Hypoclinemus innesi* with 78, 77 and 76 points respectively. In the classes for Anabantids, C. D. Roe showed a well-coloured *Colisa fasciata* to gain a red ticket (81 points), well in advance of E. Boffey's *C. labiosa* (74 points). The best male Fighter shown by F. Jennings could only muster 70 points. Out of nearly 30 Cichlids, including a complement of Dwarfs, C. D. Roe led with an *Apistogramma reitzleri* (79 points), another of the same species only one point behind being shown by C. E. Jenkins. Third was Mrs. Dobson's *Pelmatochromis kribbenis* (75 points). The best Angel Fish shown by E. F. Cope secured 71 points. A good pair of Doubleswords led the Guppy class for G. M. Davis. Amongst the Mollies was an outstanding Speckled owned by F. T. Rooke. Some promising Platies were exhibited, the best being J. J. Brady's pair of Moons. In the class for true pairs of Swordtails E. Boffey's Green Wagtails (75 points) just led a pair of Reds exhibited by H. G. Rundle. Just as in the coldwater section the best fish was found in the A.O.V. class, so in the tropical section that

Southend's New Venue

IN the shadow of the Kursaal's scenic railway, roundabouts and hoop-las, Southend Leigh A.S. staged its seventh annual show over the August Bank Holiday weekend. Whilst certainly in the shadow it was definitely not pushed into the shade by these counter-attractions for the society can congratulate itself on an event well presented in a spacious hall. The public seemed similarly impressed for a very good attendance of 6,000 was recorded.

The taking of the Kursaal Hall was a new departure and the larger area available, the facilities offered by the Kursaal authorities and the proximity to the main run of holiday-makers helped to make it a distinct improvement on earlier events, from the showmanship point of view.

Thanks to "gingering-up" by at least one official, an excellent entry—almost 250—was received solely from members. Show organiser was Mr. W. H. Carter, with a number of other committeemen and members rallying round to assist. Messrs. D. Connor and Jenkins set up an attractive water garden and the show was patronized by local traders with stands. Especial mention, also, for one of the finest herpetological sections seen at any show. Winner of the Abbott Cup for most points was Mr. W. Hoare.

All round quality of individual exhibits—staged mostly in pairs—was good although there was some fluctuation of standard among the classes. Placing the awards were Messrs. H. J. Kimble and G. E. Brown for the tropicals, and Mr. C. E. Cole for the coldwater and furnished classes.

(Continued next page.)

Southend Show—continued

Best tropical fish and winner of the "Flamboro" Cup was a Jack Dempsey perfectly staged by Mrs. M. Sweetenham. Following this fish in the Cichlid class was a *Pelmatochromis kiribensis* (Mr. L. E. Willis) with lovely fin colour but body a trifle heavy. In the Black Widow class Mrs. Duffoisson's fish of good colour and shape, but failing a little on deportment when we viewed them, were the leaders and winners of the DuBoisson Cup.

Livebearers were not too exceptional although Mr. W. Hoare's Velfera Mollies showed good development and were of reasonable size. Guppies were headed by Mr. M. C. Mash's exhibit and the same exhibitor also led the Platy class with a fine pair of Reds—beautiful colour. First in the Swordtails was Mr. R. S. Barnes, with Wagtails of nice colour and shape, although they could have had denser black fins.

For a club show the Fighters were really good. Mr. J. Layzell's Blue was a worthy winner with fine finnage finish. Mr. D. E. Connor was second with a more developed fish of better body shape, but fin edging was ragged. Another commendable class was the A.O.S. Labyrinths, where a pair of Paradise Fish in rare form took a first for Mrs. M. Sweetenham. The Leeri Gourami class was headed by Mr. G. H. Pryor's well-developed fish which failed a little on matching. Treasurer I. Cotgrove had success in the class for Zebras with a pair showing good straight lines, although markings in the male's tail fin were a little faulty. Mr. D. E. Connor's Pearl Danios gained a first in their

class. Their colouring showed well, but shape was not too good. Clean body colour was shown by Mr. W. Hoare's excellent White Clouds in the Mountain Minnow Class. They were rather small, but seemed to be young specimens. Mr. L. E. Willis' Tiger Barbs, leading their class, had fine body depth and rich colouring. The A.O.S. Barbs provided a collection of quality fish with Mr. L. E. Willis' *B. ticto*, well grown and coloured, in first place and the same exhibitor's *B. schuberti*, second. These latter were somewhat small, but most Schubertis on the show bench recently seem to have this failure. Excellent fish were also on view among the A.O.S. Characins. First were Mr. G. Cooke's *H. rosaceus*. We have seen male fish with more developed dorsals but, this apart, they were a remarkably fine pair; even so, Mr. L. E. Willis' *Nannostomus anomalus* could not have been far behind. Unusual leaders of the A.O.S. Egglayer class were Talking Catfish, staged by Mr. W. Hoare, in superlative condition. Mr. Hoare also gained a first with an Angel Fish of excellent colour, good deportment and fair size.

COLDWATER CLASSES

Jones Cup for best coldwater fish in show went to Mr. S. W. Greaves' large, good quality Shubunkin. Mr. M. C. Mash's fish took first and second places in the Common class. The second had not the body depth or colour of the leader. Mr. W. Hoare was first and second in the A.O.V. Goldfish class with a Scaled Veiltail and Telescopic Fantail, the latter failing on body shape. Mr. S. W. Greaves' large, beautifully conditioned Golden Orfe won the A.O.S. Coldwater Fish class and took the Saunders Cup

with Mr. M. C. Mash's Golden Orfe—not quite the colour—a close second.

BREEDERS' CLASSES

Fourteen entries faced the judges in the class for egg-layers. Mr. L. E. Willis' *Pelmatochromis kiribensis* team won the Barnes-Oake Cup. It was an honour well deserved, particularly as the fish were only nine weeks old and well developed although, naturally, not showing much colour. Coronation Cup for leading team in the livebearers went to Mr. D. Connor's Red Platies, beautifully matched with good, rich colour.

FURNISHED AQUARIA

Members certainly gave their support in the furnished aquaria section—the finest display-window for the hobby at any show. Thirty entries were received and they formed an impressive array down one side of the hall. No tank disgraced its exhibitor but it would be wrong to suggest that entries were, generally speaking, above good average standard. This should not be misinterpreted for if the 22 exhibitors staged comparable tanks in their homes then the quality would be way above the general appearance of living room tanks, excepting only the comparatively few persons who specialise in this mode of decoration. Mrs. Gibbs took first prize and a Brooks Shield in the tropical aquaria. She employed a mass of fine-leaved plants to give a good impression of depth although the overall effect was a little jumbled. Mr. M. C. Mash, the second prizewinner, also won a Brooks Shield. The leading coldwater tank (Mr. K. Heathcote) had a similar failing to the first tropical, although, here again, it formed a quite pleasing picture.

Highlights of the Season's Open and Radius Events

AT Macclesfield A.S. show the judges, Messrs. E. Chapman and A. McDowell gave the best in show award (Coronation Trophy) to A. Lunt's male Blue Gularis. WATER LIFE diploma and the Stanway Challenge Cup for best furnished aquaria also went to Mr. Lunt, followed by A. E. Mellor and N. Wolfenden. The society challenge cup for best breeders' team of egg-layers was won by R. Bradley (White Clouds) and the Butters Challenge Cup for breeders' livebearers to R. Casey (Flagtail Guppies).

The Pump Room was the venue for Bath A.S. annual show, judged by Capt. L. C. Betts and C. W. G. Creed. Entries were well up on the previous year and the coldwater section was well supported by Bristol aquarists. WATER LIFE diplomas went to Mrs. D. Hindson and Mr. R. James. Other special awards were:—Sydney Cup best club furnished aquarium, Bristol Tropical F.C. Mrs. Gurney's cups, best individual tropical and coldwater furnished aquaria, R. James; Robert Membership Trophy, best tropical, Mr. and Mrs. R. Jefferies; Campion Trophy, best member's tropical breeder's exhibit, R. Benson; A. G. Gurney Cup, best breeder's egg-layers team, R. Kelly, ditto livebearers, R. Benson; B. W. Moore Trophy, best member's Cichlid, and Hindson Cup, best male Guppy, Mrs. D. Hindson; Bath A.S. Cup, best member's coldwater fish, D. S. Paul; Primo Cup, best coldwater fish, G. S. Stone, B. W. Moore's Trophy, best member's Fantail, B. W. Moore; Mrs. V. W. Gardner's Trophy, best breeder's Shubunkin, F. Brain. Hindson Cup, best breeder's A.O.V. coldwater fish, D. S. Paul.

Mr. A. Wardle of Bury won the Blackpool Tower trophy for best fish at Blackpool & Fylde A.S. show with a *Basilus baivis*. The best member's fish was J. Peck's *Apistogramma romirezi*. Furnished aquaria awards were: Clubs, I. Bury A.S.; 2. Fleetwood A.S. Individual coldwater, I. V. Fletcher; Individual tropical, I. Mrs. J. Dodsworth. The breeder's section was well supported attracting 44 teams.

Over 1,000 fish were on view at the single entry show of Hendon A.S., judged by Messrs. Boarder, White, Harker and Phillips. The outstanding Permablack Mollie shown by K. Fawcett was best tropical and W. H. Gooderham's Fantail, best coldwater. Out of 132 other awards made, there were 9 silver cups for the breeders' classes.

Trophy and special prizewinners at Portsmouth A.C. show were:—Interclub furnished aquaria, Southampton A.S.; ditto individual coldwater and tropical, A. Stoodley. WATER LIFE diploma, best coldwater fish, C. Whitehead (Oranda);

WATER LIFE diploma, best tropical, J. Robinson (*Apocheilus lineatus*); Breeders' teams, coldwater, W. Evans; ditto tropical, E. Goleworthy; best Labyrinth, F. G. Lush; best Veiltail, C. Whitehead; best coldwater entry (members), F. G. Lush; ditto tropical, J. Robinson; best Mollie and best Barb, W. Smyth; best A.O.S. Livebearer, Mrs. G. Poynter. A prefabricated fountain, pond and water wheel which had taken nearly a year to build was displayed by G. Poor; another member H. C. M. Able artistically presented a large reptile section.

The third Welsh National A.S. show attracted an entry of 150. Cup winners were:—Best fish in show and WATER LIFE diploma best coldwater exhibit, L. Roberts (Veiltail); best tropical (WATER LIFE Diploma), A. Phipps (Sailfin Mollie); best junior exhibit, Miss Carole Lewis; best furnished aquarium, J. Martin; Interclub contest, Newport A.S.; best member's aggregate, J. Amesbury. Over 1,000 people attended, including leading English as well as Welsh aquarists.

Held at Friary Park, N. London, the open show of Enterprise A.S. was well supported. WATER LIFE Diplomas were won by W. I. Wilson, best coldwater fish (Scaled Fantail) and Mr. and Mrs. E. Walker-Bagg, best tropical (Angel). Leading furnished aquarium awards were: Interclub Tropical, Hendon A.S.; interclub coldwater, Stoke Newington A.S.; individual tropical, A. Baldock. Messrs. Creed and Boarder placed the awards.

A successful aquarist section was staged at Dagenham Town Show in August, the organising being undertaken by Dagenham A.S. and Hornchurch & District Aquarium Society, the third local club. Romford A.S. helping by swelling the record entry. Messrs. R. G. Mealand and C. W. G. Creed judged. WATER LIFE diplomas were gained by G. Carter for the best design and technique in the tropical furnished aquarium and F. Ahrens for best fish in show (Malayan Angel Fish).

This year, Romford A.S. staged a one-day event compared with the three-day shows of previous years. As it happens, the attendance on the one day was greater than that for the three-day event last year. A feature of the show was the marine aquarium shown by G. George. Mr. C. J. Saunders, B.Sc., judged. The club tropical furnished aquarium class was led by Forest Gate A.S. with the home club second. The winner of the individual tropical furnished aquarium class was F. Ahrens who also staged a large class of outstanding fish, sweeping the board to win 18 cups, with red tickets in 16 classes. He

won the grand challenge class, best fish in show special with an *Astronotus ocellatus* and the award for most points. C. Ahrens' Tiger Barb was adjudged best junior exhibit.

Entries were received from 24 out of 31 affiliated clubs for the annual exhibition of A.S.L.A.S. (Association of S. London Aquarist Societies). The judges were members of the Association's own panel. Trade stands and a display by the London Group of the British Herpetological Society added to the attractions of a well-planned event. Cup and trophy winners were:—Interclub Trophy, most points, London Transport; Bental's Cup, best club tropical furnished aquarium, Balham A.S.; Coronation Cup, ditto coldwater, Redhill A.S.; J. E. Edwards Cup, best individual tropical furnished aquarium, Mrs. P. Bell (Thames Valley); G. O'Neill Cup, ditto coldwater, W. Leach (Redhill A.S.); Barry M. Austin Cup, best fish in show, and Ron Gregory Cup, best coldwater fish, Miss D. Morris (Horley A.S.); with a Bristol Shubunkin; Breeders' Circle Cup, best tropical breeders' team, R. H. Wright (Sydenham and Penge A.S.) with team of *Nannostomus anomalus*; Billings Cup, best tropical Catfish, S. G. Wismark, with *Corydoras palli*; Wimbleton Trophy, best pair of livebearers, K. D. Fawcett, with a Black Sailfin Mollie.

WATER LIFE Diplomas at the first Stoke Newington A.S. annual show went to F. Barry's Veiltail for best individual fish in show and F. D. Balaam's team of Moors for best breeder's entry. The quality in the furnished aquarium section was high, the interclub tropical class being won by the home team, followed by Hendon A.S. and Spelthorne A.C., the home club also winning the coldwater class again followed by Hendon A.S. with Bethnal Green A.S. third. Special winners were F. Barry, best coldwater fish (also third best fish in show), G. A. Mills, best in show with a Nigger Barb. The winning Labyrinth, a Blue Fighter shown by W. E. Gawler was considered by the judges to be the second best fish in show.

The fifth annual exhibition of Bethnal Green A.S. was well staged and there was keen competition for the numerous cups and trophies. Messrs. R. G. Mealand and S. Harker judged. WATER LIFE Diplomas went to E. F. Van Staryan's Black Widow (best member's fish) and F. D. Balaam's Moors (best breeder's team). Other leading entries were: Interclub tropical furnished aquarium, Marble Arch A.S.; ditto coldwater, Stoke Newington A.S. Fighter Championship (39 entries), R. E. Churchman; Breeders' livebearers, Mrs. Franklin (Sunset Platies); breeders' egg-layers, W. E. Gawler (Tiger Barbs); breeders' coldwater, F. D. Balaam (Moors).

On Seeing White Fighters Letting the Federation Get Under Your Collar

THE backroom boys of the Federation of British Aquatic Societies are always thinking up something new. The latest will help you in festive mood to see white fighters instead of pink elephants, for they have designed and approved a federation tie, conservative in colour, to suit a dark blue, but showing a dash of daring by adorning it with the F.B.A.S. Fighting Fish insignia in plain white. Some revolutionary souls have complained that the Federation gets under their collar; now they will be encouraged to let it do so officially—provided they pay for a tie. Woe betide the club delegate who turns up at future Assemblies not wearing the official uniform. He will be sent packing as one not fit to grace the overcrowded committee room at Friends House and will be told on leaving the meeting by none less than the chairman himself that it is not becoming for a society representative to attend incorrectly dressed. In these days of full employment will anyone grumble that the cheaper range costs 12/6d? Will the Council feel it beneath their dignity to purchase other than the rayon and silk ones which are priced at 15/6d?

At the September assembly much business was done. The F.B.A.S. trophy competed for at

Southampton this year will be offered at Enterprise A.S. show at Friern Barnet in 1955. The Federation is to give the juniors at WATER LIFE show the first opportunity to win for one year the new junior Trophy. For some time past there has been a series of hints made that the Association of S. London Aquarist Societies was going to bring out its own standards. That the rumour was unfounded was settled by A.S.L.A.S. and the Federation issuing a joint statement on the matter. A committee of A.S.L.A.S. is of the opinion it is highly desirable that national show standards should be produced for all fishes. The Federation's Council is of the view that, apart from standards for cultivated fishes, similar standards are not necessary for the majority of other fishes. It seems to be a case of the two organisations agreeing to differ.

The Council has been busy reading the opinions published in WATER LIFE on the need or otherwise for novice as well as champion classes but has not waited until the end of the debate to issue its findings. It now states that "at the present time championship and novice classes are not required. The problems involved in their organisation and the possible deterioration in social relationships within the hobby were con-

sidered to outweigh the likely benefits of such classes". Other hobbies have not apparently met insurmountable difficulties in putting on two sets of classes nor has there been any obvious feeling, engendered by their introduction. We forecast the desirability of such an innovation but are content to carry on quietly knowing that a prophet is never honoured in his own columns.

Whilst the F.B.A.S. will not undertake to stage a competitive class at the 1955 WATER LIFE show they are taking advantage of the opportunity to show some fishes and to set up a display explaining the ramifications of the organisation. A sub-committee will look after this display as last year. The Federation has also been invited to provide the judges.

A stronger financial position is reflected in the accounts. A new scale of fees has been proposed and it was agreed to bring the financial year forward to close on 31st October each year. Changes in the executive are likely. Retiring members on 31st December include the chairman, treasurer, services secretary and the following council members, Mrs. W. Meadows, Messrs. C. W. G. Creed, S. Harker and H. Russell-Holland. So far, Mr. Creed and Mr. Bayliss (treasurer) have offered to stand for re-election but Messrs. Butt (chairman), Jelly (services secretary) and Harker are not able to stand again. The meeting closed after one society had raised the question of electing a President.

Diverging Paths

Will Bristol Give Way to the F.B.A.S.?

IN the last issue, we announced the willingness of Bristol A.S. to meet representatives of the F.B.A.S. to discuss their respective standards for exhibition fishes. The contributions in this issue from Capt. L. C. Betts (chairman of the Goldfish Society of Great Britain) and Mr. R. J. Allcock (G.S.G.B. President) show in different ways why it is not possible for their organisation to make concessions in regard to their basic varieties. Both the F.B.A.S. and Bristol are in a different position, and whatever the arguments may be for or against the outlines they have adopted, it should not be impossible for their two sets of standards to be merged.

Most readers know that, as well as the two sets, which are not so dissimilar, there are the four basic varieties issued by the Goldfish Society of Great Britain. Those, however, who are not aware of the chronological order of events may wonder why the views of the specialist clubs have not been readily adopted by the other organisations. The following calendar should help them to see how the present situation has been built up:—1931 (re-published 1935) The (defunct) British Aquarists' Association issued Goldfish Standards to replace those originating from the United States, previously used in Britain. 1934 Bristol A.S. approved a Bristol Shubunkin standard. 1947 The Federation of British Aquatic Societies issued Goldfish standards (virtually reintroducing, with certain changes and omissions, those of the B.A.A. and including Bristol's Shubunkin standard). 1950 The Goldfish Society of Great Britain issued standards for four basic varieties. 1952 Bristol A.S. issued its own set of standards which were, in effect, nearer to those of the B.A.A. plus a slightly altered outline with a change in pointing

for their own Shubunkin standard. 1954 Meetings have been held between G.S.G.B. and F.B.A.S. representatives to discuss their divergent views. These resulted in a useful exchange of opinions but neither side was prepared to make such concessions as the other wanted. The hope that the discussion might be on a three-party basis, by the inclusion of Bristol A.S., did not have a chance to materialise because of the impasse reached and the meeting between the F.B.A.S. and Bristol A.S. is a late development. The outcome will probably resolve itself into Bristol and the Federation agreeing to recognise a set of standards embodying points from both, leaving the G.S.G.B. to pursue its own policy for the time being.

Back in 1931, the B.A.A. committee discussed outlines and after accepting suggested modifications from different members produced line drawings of fish which had a pleasing appearance and were thought to be attainable. There is a somewhat similar background to the 1934 Bristol Shubunkin. Again in 1947, the F.B.A.S. standards were evolved from drawings submitted to a committee, the modifications made being in response to suggestions which came from individual members.

The Goldfish Society having come into being, it decided to review the standards and took up an entirely different attitude. Whereas the earlier standards were outlines which pleased the eye and were considered to be ideal shapes to which fish could be bred, those of the G.S.G.B. were based on an examination not only of body shape and fin outlines but on the skeletal structure. The findings of the G.S.G.B. were that we needed to concentrate on a few main types rather than recognise many crosses between those types and to have standards based on shapes that could be bred, bearing in mind the limitations imposed by the shape of the skeleton and the amount of finnage a fish could carry.

from America less exaggerated than we have been led to believe? At the time of going to press nearly 650 entries had been received from all parts of the country.

More Clubs Join F.N.A.S.

FOUNDED in 1947, the Federation of Northern Aquarium Societies is slowly but surely becoming more and more influential. It now has 62 societies affiliated, the counties represented being primarily Lancashire and Yorkshire with clubs from Cheshire, Lincolnshire, Co. Durham, Staffordshire, Cumberland, Nottinghamshire, Northumberland and one Welsh county—Denbigh. Quarterly assemblies are held at Belle Vue, Manchester and there is a council with Mr. G. T. Iles as secretary and Mr. C. Graham, treasurer. The President is Dr. J. F. Wilkinson.

New N.A.S. Council

IN accordance with Rule 7 of the National Aquarists' Society, the treasurer, Mr. F. G. Odams, and councillors D. G. Armstrong, W. A. Bone, R. E. Churchman and E. J. Gage retire this year at the end of their term of office. Messrs. Bone and Gage are unable to stand for re-election but the others are willing to do so. All members have by now had the opportunity to nominate and vote for the new council. The results will be made known at the annual general meeting on October 11 at the New Horticultural Hall, London, S.W.1. The reports by the President (Mr. L. B. Kaiterns) and the treasurer will, it is expected, be encouraging so far as the general progress of the society is concerned but neither will minimise the effect on the funds of the cost of the last exhibition. Any question of not holding another "National" is unthinkable and the two officials are likely to put forward a very strong case for staging the event in 1955 as usual. The loss this year was due to the unexpected expenditure on the purchase of tanks and staging and because the attendance and trade stand support was less than anticipated. Next year, the costs should be considerably less and if the weather is reasonable the attendance ought to be up. If that is so the treasurer will be able to report a balance that will offset the figures "in the red" for 1954.

Members of the N.A.S. will be sorry to learn that Mr. T. Fromant has undergone an operation. We wish him a speedy recovery.

By the Yard

IT was reported at the September committee meeting of the Goldfish Society of Great Britain that the society's exhibit had been set-up as arranged at the South Bank Aquarium. It was announced that Capt. Betts had been re-elected as chairman and Mr. M. Cluse as a lay member of the committee. The society is already making provisional arrangements for its next annual dinner. The advisory service is growing and copies of a paper recently prepared by the technical director, Mr. E. Weatherley, is to be sent out to all subscribing societies. With regard to WATER LIFE show, it was agreed to invite other clubs to compete in a competitive class against the society. So far as its non-competitive display was concerned, the technical director stated that he had hopes of borrowing a tank 12 ft. x 2 ft. x 2 ft. in which to stage a show of every known variety of Fancy Goldfish. If the tank were not available he would require the use of ten 3 ft. long aquariums.

Show secretaries are invited to send for a copy of our show stationary catalogue. WATER LIFE helps to make your work easier by supplying at competitive prices award labels, tank labels, prize cards, badges, etc., etc. Send for your copy to The Publisher, WATER LIFE, Dotset House, Stamford Street, London, S.E.1.

Guppies on Show

F.G.B.S. Display at London Zoo

THE Federation of Guppy Breeders' Societies is to be warmly commended on its initiative in arranging a competitive show of Guppies at the London Zoo, which event, as announced in our last issue, will be staged in the Pavilion Cafeteria at the Regents Park Zoological Gardens from 12 noon to 6 p.m. on October 2. In addition to the members' classes, which will be well supported by all sections of the Federation, there is likely to be some good competition in the section of six classes open to all-comers. We hope that the efforts being made by the F.G.B.S. will be supported by all who can pay the event a visit and that as a result of the show, a large number of newcomers will be attracted to our ranks as Guppy breeders. Will the Guppies from overseas open our eyes as to coloration? Are the claims

Club Notes and News

The Editor invites clubs to send brief reports of meetings and announcements of forthcoming events. Items for the December-January issue should reach this office by Monday, November 15.

PARTICIPATING in a local Carnival, Romford A.S. entered a tableau representing a furnished aquarium. We hope to give details of this novelty display in our next issue. Other societies might like to copy the idea. The "aquarium," 12 feet long, was mounted on a lorry.

SIX London societies competed with Colindale A.S. at their September interclub show. The WATER LIFE diploma for best fish in show went to Mrs. W. E. Richardson's Silver Tetra, beating Mrs. G. Smith's Siamese Fighter by one point. Colindale A.S. won the diploma offered to the society gaining most points.

THE Gloucester & Cheltenham A.S. stages its annual members' show at Cheltenham on October 28-30. WATER LIFE offers a diploma for most points.

HELD in conjunction with a local Flower Show, the non-competitive exhibition of Newcastle-upon-Tyne A.S. early in August attracted considerable attention. Twenty-four furnished aquaria, Goldfish, tropical fish, reptiles and amphibia, were seen by a large number of people.

AT the annual show of Nuneaton A.S. held in August the best furnished tropical aquarium shown by Mr. E. Beasley qualified for a WATER LIFE diploma with 87 points.

THE chairman of Medway A.S. reported a good year at the A.G.M., the successful annual show resulting in an increased membership of 50 per cent. The table show shield has been won by Mr. K. Brightley. Cups in the home aquaria competition went to Mrs. C. Martin, coldwater, and Mr. H. Phipps, tropical. Sir Garnard Tyrwhitt-Drake, owner of Maidstone Zoo, has become the society's first President.

A FILM show was included in the Peterborough A.S. programme for the past quarter. The annual show attracted 185 entries. WATER LIFE diplomas went to Messrs. M. Rowles (with a female Green Swordtail) and H. Richards (Goldfish).

RECENTLY inaugurated Chorley A. & C.S. has become affiliated to the F.N.A.S. Mr. D. Ince, 12 Knowles Street, Pall Mall, Chorley, Lancs., is secretary. Meetings are held on the last Monday in the month at 7.30 p.m. in the Overlookers Offices, Cunliffe Street, Chorley. On September 27 Mr. J. McCormack lectured on fish diseases.

MRS. W. M. MEADOWS gave a talk at Arnold Aquarists' (Wembley) September meeting. A table show judged by Mr. Aillies brought awards to Mrs. Barnard, Messrs. Williams and Keal. Arnold Aquarists won an interclub show arranged between them and Willesden A.C.

EACH exhibitor at the September Norwich Fishkeepers' Circle's table show gave a short talk on their fish. The Circle's junior section visited the home of the chairman, Mr. A. Huson. He explained how to set up furnished aquaria and showed types of Fancy Goldfish.

A SPECIAL attraction at Kettering A.S. on October 2 will be a lecture by Mr. C. van Duijn, Jnr. (Rotterdam) on diseases of fish. This is at the Co-op. and Labour Institute, Newland Street, Kettering, at 6.30 p.m. Serious illness has meant the resigna-

tion of Mr. Brigstock as secretary. His successor is Mr. C. Baldock, 3 Belvedere Road, Kettering.

SOME good quality fish were seen at the September show staged by London Transport (C.R.S.) S.A. at Camberwell. The Goldfish classes were particularly well supported.

THE fifth annual show of Accrington A.S. held in September was a great success. The best exhibit in the show was awarded a WATER LIFE diploma. This society is an active member of the F.N.A.S.

AMONG the attractions at the recent Kempston Flower Show was an aquaria section staged by Bedford A.S. North Herts. Corby and Kettering competed with the Bedford members, Kettering taking the furnished aquarium award, Bedford two firsts for individual fishes and a North Herts. member the prize for best fish in show.



Photograph

[D. Worrall

Right, Mr. J. Dodsworth, President of Rochdale A.S., acting as guide at his society's show to Mr. Barney Colohan, the well-known radio personality who was accompanied by his wife and two daughters.

ANOTHER new affiliation to the F.N.A.S. is the recently formed Hans Renold Social Union Aquarist Section. Secretary is Mr. A. Bartholomew, Renold Works, Didsbury, Manchester.

WINNERS of diplomas given by WATER LIFE at Walthamstow A.S. fifth annual show were Mr. W. Dumont (London Shubunkin) and Ilford A. & P.S. (interclub furnished aquaria class).

AN aquatic display was staged by Forest Hill A.S. at the recent Lewisham Garden Guild and Horticultural Society's show held in the Town Hall, Catford.

WHEN the Woolneeds Social Club at Ashford, Kent, decided to stage a pet show on September 11, the local aquarist society co-operated by putting on a non-competitive display of fish.

OCTOBER 9 is the date selected for an exhibition by Altrincham A.A. It is not to be competitive but will consist of furnished aquaria set-up to interest the public in the hobby.

MR. S. ROSSER, of 16 Dunraven Street, Treherbert, Rhondda, S. Wales, is the first secretary of the newly formed Rhondda A.S. Meetings held every third Tuesday of each month at 7.30 p.m. in the Prince of Wales Hotel, Treorchy.

THE local Aquarists' Festival staged by Stockport A.S. at the end of August consisted of an open section of 300 tanks and one confined to members, 100 tanks. In the open classes WATER LIFE diploma went to Mr. J. D. Grimshaw who staged the best individual tropical furnished aquarium. The WATER LIFE diploma for the best fish in the members' section went to Mr. L. Shaw's Penguin Fish.

A FEATURE of the local Rotary Club's Hobbies Exhibition in November will be the aquaria section to be staged by Wigan A.S. Last year 14,000 people saw the show, a figure it is hoped to surpass on this occasion.

THE new secretary of Smethwick A.S. is Mr. J. W. Bradley, 52 Church Lane, Smethwick, Staffs. The society's forthcoming programme includes six tropical and three coldwater table shows.

AT the inaugural meeting of Penistone A.S. Mr. H. Kaye was elected chairman and Mr. V. Robinson of 61 Victoria Street, Penistone, Sheffield, secretary. Meetings are to be held at the Spread Eagle Hotel, every third Tuesday of the month.

TWO teams of Ilford A. & P.S. members took part in a quiz in September, the winners being only half-a-point ahead. During that month, the new show secretary, Mr. Peverley, gained awards at Walthamstow and Chingford open shows.

SECRETARY of Riverside A.S. (Hammer-smith), Mr. N. W. Webb, has moved from Stamford Brook to 90 Wellesley Road, Chiswick, London, W.4. Table shows, interclub shows with Slough A.S. and meetings of a discussion group are some of the society's recent activities.

THE first open show of North Birmingham P. & A.S. takes place on October 22-23 at Alexander Sports Ground, Perry Barr, Birmingham. Details from the show secretary, Mr. F. Rooke, 240 Newtown Row, Aston, Birmingham 6.

BOTH Nottingham A.S. and Birmingham have considerable influence on societies in their respective surrounding areas. There is an air of rivalry between both centres but that did not preclude Mr. L. C. Mandeville going from Brum to the Forest to give an amusing and instructive lecture. A Nottingham member, Mr. W. C. Webber, has been invited to judge at the F.N.A.S. October 3 show.

THE Monthly News-Letter published by Aylesbury A.A. contains a very full account of a helpful lecture on Goldfish culture given to members by Mr. W. Dacre. The Association is hoping to organise a two-day tour of N. Wales next June. This Summer a very full one-day outing to South Wales proved a most successful event.

AN active society for fishkeepers employed by that Government department is known as the Ministry of Works A.S. The chairman and secretary is Mr. H. A. Wright, 75 Fountain Court, Westminster, S.W.1.

FRRIENDLY co-operation with local societies is a feature of Redhill A.S. policy. Recently Crawley A.S. visited them and won all three awards in an interclub show of breeders' teams. A quiz followed in which the tables were turned, Redhill coming well

on top. One of the judges at the show, Mr. P. Hewitt, purchased from the club six Albino Swords, presented for auction by Mr. Lambert. He immediately gave two each to the three youngest members for breeding purposes, an encouraging gesture to the juniors who could not have afforded such stock in the ordinary way.

AT a Hobbies Exhibition held in conjunction with the local annual Carnival Week, **Hastings & St. Leonards A.S.** staged a show for marine, tropical and coldwater fish. A table show for Swordtails, a talk on pond life by Mrs. Inskip and a lecture by the general secretary of the F.B.A.S., Mr. R. O. B. List, are three recent items in the society's current programme.

STAGED in a local art dealer's gallery, a small exhibition of tropical and coldwater fish put on by **Winchester City Aquarists** attracted the attention of a large number of people. There was no charge for admission but there was a collecting box in aid of two good causes, the British Empire Cancer Campaign and the City's Voluntary Tuberculosis After-care Committee.

WILL over 600 entries were received at the open show staged by **Hendon A.S.** in August. Support came from over a wide area. We hear that the show proved a liability financially, probably due to the limited size of the hall in which it was staged.

THE **British Enka Sports & Social Club** runs a hobbies section which caters for those members who are aquarists as well as those with other interests. Mr. G. G. Cannon is the secretary. This is a works organisation at Aintree, Liverpool.

MEETINGS of **Balham A.C.** now take place at 34 Ryde Vale Road, London, S.W.12, on alternate Mondays, commencing at 8 p.m. New members will be welcome. The secretary is Mr. J. Searle, 68 Southcroft Road, Tooting, S.W.17.

THERE was a full attendance at the first A.G.M. of **Llantwit Major A.S.** The society was then looking forward to supporting the Welsh National Aquarists' show that took place at Cardiff on August 20-21. The society meets at 7.30 p.m. on the second Wednesday of each month in the Cross Keys Hotel, Llantwit Major.

AUCTION sales are held by the **Midland A. & P.S.** when members' spare apparatus and surplus fish and plants are sold. At one held recently at the Midland Institute, Birmingham, Mr. Beardley, the auctioneer, kept things going at a fast pace and everything offered was sold.

THE Mayor of Walsall, Councillor H. S. Gwynn, presented awards at the annual show of **Walsall A.S.** The best exhibit shown by Mr. E. Boffey was a pair of Thick-lipped Gouramis. Master Ian Tibbetts won the junior class for livebearers.

A DWARF Gourami exhibited by Mr. F. D. Balaam gained a WATER LIFE diploma for best fish in show at the combined exhibition organised by the **Dagenham & Hornchurch societies** held in June.

FORTY-SIX local schools were invited to take part in an inter-school furnished aquaria competition at the fourth annual open show of **Hartlepool A.S.**, held September 8-11. Two WATER LIFE diplomas were competed for at the event.

EIGHT entries were made by members of **Shirley & S. Birmingham A.S.** in a show for 24 x 15 x 12 in. furnished aquaria. The first three awards went to 1, Mrs. Dobson (70 pts.); 2, L. A. Cross (68 1/2 pts.); 3, N. A. Philipson (62 1/2 pts.). This result is interesting



Exhibits at Bath A.S. show being discussed by Mr. R. L. Vince (Keynsham A.S. sec.), Mr. F. L. Edwards (Bath A.S. joint sec.), Mr. H. C. B. Thomas (S.W.A.S.A. sec. and Bristol A.S. pres.), Mrs. Edwards (Bath A.S. joint sec.), Mr. R. V. Coombs (Bristol A.S. vice-pres.) and Miss A. Gurney (Bath A.S. show sec.)

as none of the winners had previously taken an award in any show. The cards were placed by Mr. E. J. Druce, tropicals, and Mr. T. L. Dodge, tropicals and coldwater.

OCTOBER 27-30 are the inclusive dates of the fourth annual show of **Oldham A.S.** in the Inskip League Hall. For the first time the event is open to all comers. Schedules can be obtained from the secretary, Mrs. V. Tripp, 187 King Street, Oldham, Lancs. Lectures have been given to the society by Messrs. A. J. L. Rashley on furnished aquaria, T. C. Honeybill on general aspects of fish-keeping and R. Jackson on reptiles.

CLASSES for tropical fish, coldwater fish and reptiles were staged at the September show of **Rotherham A.S. WATER LIFE** diplomas were offered for the best tropical and coldwater furnished aquariums.

THE annual show of **Leicester A.S.** took place on August 25-28, when the members' efforts in staging furnished aquaria and individual fish were commented on favourably by the many people who paid a visit to the show.

AMONG the lecturers who have passed on some good advice to **Guildford A.C.** was Mr. R. Birkenhead, show secretary of the Goldfish Society. A month later a table show of livebearers was staged. The society hopes to install a tank in the children's ward at the Royal Surrey County Hospital.

THE first annual open exhibition of **Halifax A.S.** is being held on October 13-16 in the R.A.O.B. Hall, 3 Clare Road, Halifax. WATER LIFE diplomas are offered in the two furnished aquarium classes. There are also 16 individual fish classes and three breeders' classes. The judges will be Messrs. R. E. Legge, E. Chapman, and H. Loder.

REGULAR monthly meetings have been held by **Lambeth A.S.** At one, a member of the Metropolitan Water Board spoke about London's water supply. At the August event the club serviced and glazed some of the 200 aquarium frames it has purchased. The annual show was held on September 18. On October 20 a social evening is to be held.

THE best exhibit in the show at **Urmston A.S.** annual exhibition was a furnished tropical aquarium awarded 94 points in a class of 48. The exhibitor, Dr. J. Scott Clark, gained a WATER LIFE diploma.

SUCCESSFUL table shows have been held by **Hull P. & A.S.** At the August meeting, the chairman, Mr. Willerton, welcomed visitors and new members and Mr. P. Thompson lectured on livefoods. Two table shows have been arranged for next month, one on October 7 for coldwater fish, and the other on October 21 for tropical labyrinths. There is a brains trust following the first show and a quiz after the second.

THE best fish in show which gained a WATER LIFE diploma at **Dunstable A.S.** annual show was a Shubunkin shown by Mr. J. King. It led a class of fourteen with 72 points.

AT the July meeting of the **East Midlands G.B.S.** the inter-society competition and an international competition were discussed. The August gathering was at the home of the chairman, Mr. Burwell. Books from America presented by Mr. Rudkin have been added to the library. Arrangements were discussed regarding a visit by members to the October 2 F.G.B.S. show at the London Zoo.

TWENTY-SEVEN classes, one for furnished aquaria, three for single fish, thirteen for breeders' teams, and the remaining ten, sub-divided where necessary, for breeders' pairs, are scheduled for the second annual open show of the **Lancashire Aquarist Breeders' Society.** This takes place on October 29-30 at the Spinners' Hall, Bolton. More than 300 entries are anticipated. WATER LIFE offers diplomas for the best breeders' exhibit and the best furnished aquarium.

A NEW Devonshire society is **Tavistock A.S.** Mr. J. H. Walters is chairman, Miss M. E. Lyndon, 21 Exeter Street, Tavistock, is secretary, and Mr. R. Barlow, treasurer. Short talks were given at the inaugural meeting by Messrs. Coslett, Henderson, Nichols and Easterbrook of Plymouth A. & P.S.

OFFICIALS elected at the A.G.M. of **Mitcham A.C.** were Mr. C. Dale, chairman, Mr. R. Bicknell, treasurer, and Mr. H. L. Hornsby, 101 Hatfield Mead, Central Road, Morden, Surrey, secretary.

THIRTY-THREE classes are scheduled for **Bristol A.S.** open show on October 8-9, which is to be held in the Central Y.M.C.A. Concert Hall, Trenchard Street. The coldwater classes will be judged to B.A.S. standards and tropical fish by those of the F.B.A.S.

STARTING its new season on September 28, the **North of Scotland A.S.** is to meet every fortnight at its Aberdeen headquarters. The August annual show proved a great success.

New Factory at Yatton

WORK is now under way on Caperns new bird seed and fish food factory at Yatton, Somerset. It is hoped to go into full production there by June 1955. Founded by Mr. Francis Capern, a chemist of Weston-super-Mare, in 1879, Caperns Ltd. have occupied premises in Lewins Mead, Bristol, since 1896. Rebuilding and enlargements on the present site have taken place several times, but a limit has now been reached. It is only by building new premises that the firm can utilise to its full capacity the modern machinery which has been specially designed for their requirements.

Aquarists' Internationale

Further Items from Correspondence
Received by Mr. R. W. Andrews

MR. L. J. MARLTON, Durban, South Africa, relates how, during his Far East trip, he first stepped off at Singapore where he visited the Tee Way Yong Store. Here he says that he saw more Rasboras in ten minutes than he is ever likely to see again in his life. This store must have, according to Mr. Marlton's estimate, around 50,000 Rasboras of different species in stock. These were contained in big glass tanks each of about 15 gallons capacity. All were well aerated. There was also a huge number of "Cooie" loaches, but very few other species of any interest other than marine fish, which included an attractive variety of Scat. Next, the journey was continued to Hong Kong, where the acquaintance was made of Mr. George Bing, a leading Chinese fish-dealer. He had a good selection of tropical fish including some wonderful Fighters. Not the Singapore Fighter but the genuine Siamese.

From Hong Kong on to Yokohama where the "Goldfish grow." There was nothing there in the way of tropicals but they had some beautiful Shubunkins, Lionheads and Veiltails. Mr. Marlton went all over Japan looking for new fish, but he states the people there are not fish-minded as far as tropicals are concerned, and neither could he locate any of the Japanese turtles.

Gene Wolfsheimer, Los Angeles, U.S.A., writes: "I've been taking good care of my Checkerboard Cichlids in hopes I can get them to spawn. Scientific name is *Crenicara maculata*. I thought these would be classed as Dwarfs, but at present writing my largest fish is about four inches and still growing. They are most beautiful but rather hard to describe. They are quite slim—torpedo shaped. Their nose reminds me of a marine parrot fish. The checker markings are still visible but the whole body takes on several hues, the majority being shades of green. The tail has vertical bars, fanning out from the peduncle. Fins are edged in orange red. To my dismay, I am beginning to watch what I

thought was a large female, that matched in size my beautiful male, slowly beginning to assume more male colouring and fin length. So it looks like the smallest one of the three, which has always been a colourless runt, might be the only female. It is quite possible that, like our Apistogrammas, the females are quite considerably smaller than the males. It will remain to be seen.

"The other Cichlid I am working diligently on is the new African Dwarf, which is a recent importation, called *Pelmatochromis kiribensis*. It is a beautiful creature but, in its early life, before it has chosen a partner, it is rather mean. Apart from the larger pair which have accepted each other and are getting along just well now, I have four young ones. Those I had together with other fish before I had a chance to really see what was going on. The largest of these four (which is a beautiful red-bellied female) kept picking on the smaller female and worried it until I had to take her out. I also moved out the smallest male before anything happened to it and now the bullying female is left with only a male as big as herself. Even so she is very much the boss. The only other fish in with them are two *Jordanella floridae* which are rugged enough to take care of themselves."

Goldfish Import

MR. T. HOREMAN (Tachbrook Tropicals) received another interesting consignment of Goldfish a short while ago. It will be recalled that in earlier shipments Mr. Foreman had Bubble-eyes, Pearl Scales and Pommies. In the latest batch were some very fine Lionheads, some Orandas—one of which showed imperfect pommies—a number of Celestials and a further consignment of Bubble-eyes. One of the latter had the largest "bubbles" we have seen, being approximately one inch in length and over $\frac{1}{2}$ in. in width. Considering their size the fish carried them extremely well. Two further fish which defied exact classification looked somewhat like Blue Shukins in that they had long double tail fins and no dorsal. Their bodies were long and slim, however, more like those of single-tail fish than the rotund form of the typical Shukin.

Big M.A.A.S. Rally

ON Sunday, September 12th, members of societies affiliated to the Midland Association of Aquarists' Societies travelled from places as far apart as Burton-on-Trent and Cheltenham, to join more local members at Dudley Zoo for the Association's Annual Rally. Favoured by the sun, some 300 aquarists were able to enjoy the attractions of the Zoo and its Aquarium, in addition to attending the meeting.

After a short speech of welcome from Mr. Donald Risdon, Mr. T. L. Dodge spoke of the work of the M.A.A.S. He was followed by Mr. W. J. Page, Editor of WATER LIFE, who had some sound advice to offer, both to Societies and to their regional associations. He congratulated M.A.A.S. on its continued development, but expressed the hope that the Association would not be allowed to grow so much as to become unwieldy. In its present form M.A.A.S. was an example to groups in some other parts of the country. As regards societies, he wondered if sometimes we did not devote too much time to aquatic politics at the expense of our fishkeeping.

An appeal by the Chairman, Mr. H. Cadwallader, for active co-operation from Society members, was echoed in a most interesting speech by Mr. T. Lee, Chairman of the Bell Vue Aquarists' Society and a member of the Council of the Federation of Northern Aquarium Societies, who spoke of the work of his Federation, of their difficulties and of their plans for dealing with them. Mr. Lee mentioned the disadvantages of having too many societies of too small a size, with the consequent multiplicity of shows and excessive demand for lecturers and judges. While the idea of regional groups was good there was a possible danger in attempting to cover too wide an area. The mere payment of a subscription was not all that was required of affiliated societies. Active help from society members was even more important.

Members attending the Rally will echo the hope, expressed by Mr. Risdon, that this will be the first of many such events. The committee will consider the next event shortly.—E.J.D.

FREE FOOD

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