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and Pondkeeper

FEBRUARY, 1961



MONTHLY
Vol. XXV No. 11

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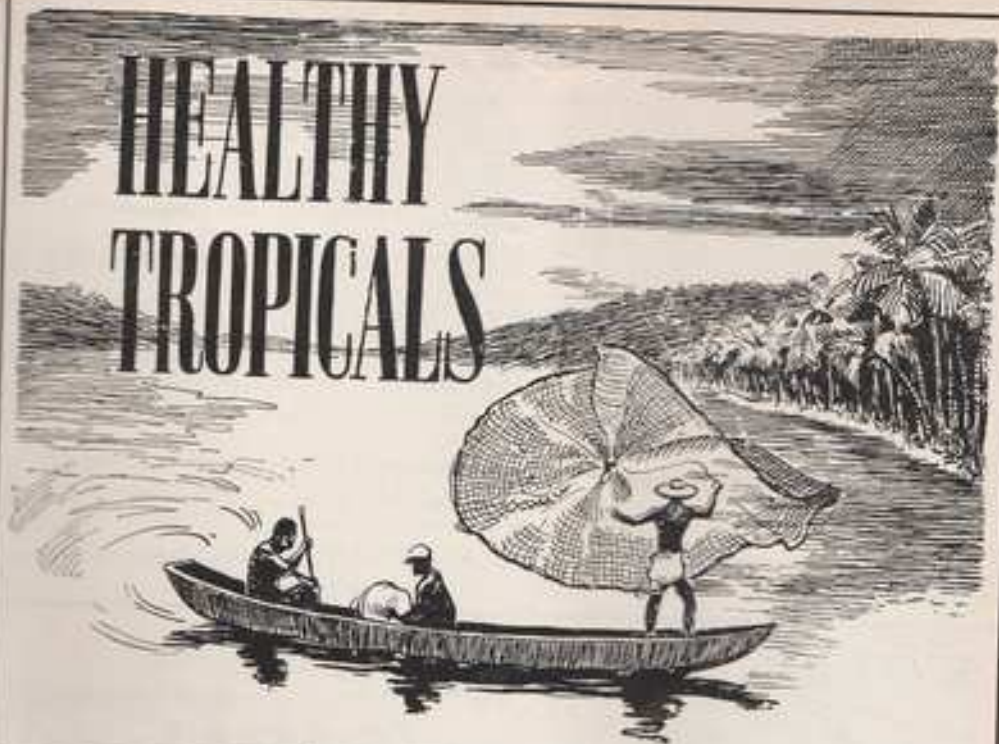
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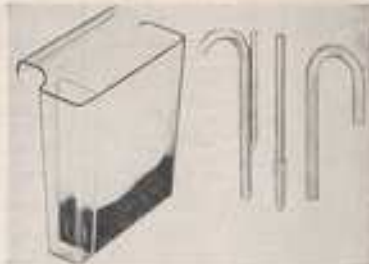
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1961

Editorial

SALMON, it is claimed by workers at the Nainamo, British Columbia, Biological Station of the Department of Fisheries of Canada, use the stars and the skies to maintain their direction of travel when migrating from the lakes to the sea. Observation of the behaviour of sockeye salmon has shown that the fish become less efficient in keeping to their route when sight of the sky is lost in overcast conditions or when some artificial covering over the water is present. Such factors as bright moonlight, the after-glow of sunsets and even the illumination of the sky by a city's lights can make difficulties for these fish. Exactly how this sense works in the fish seems obscure, and we wonder whether any difficulties are going to be created for the 20,000 Lune salmon, which, all being well, are likely to hatch from the eggs collected by the Lancashire River Board to be flown last month to Montevideo on their way to the Falkland Islands. It is intended that these fish shall be used to establish salmon fishing in the Islands.

OVERPAGE we print some tributes to Dr. Robert J. Affleck, whose untimely and sudden death last month has been felt as a shock by his many aquarist friends and as well by those in the hobby who, although without personal knowledge of the man, admired his work and appreciated the value of the scientific approach by which he contributed so much to the advancement of those sections of the hobby with which he was most closely associated. For something over 20 years his name had appeared frequently in journals representing aquarists as author of numerous articles on a wide range of subjects, theoretical and practical. We draw the attention of our readers particularly to the tribute by Mr. M. D. Cluse, chairman of the Goldfish Society of Great Britain, on page 223, in which is announced the creation of a Memorial Fund to be used to assist the widow and children of Dr. Affleck, open to contributions from all aquarists wishing to mark their regard in this way.

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Dr. R. J. Affleck



"ROB" and I had known each other for about 25 years. He was in those far-off days a Manual Training Instructor, but since then had risen by sheer personal ability to Doctor of Philosophy and a place of the highest regard in our hobby. Many are the times we have met. He had a unique habit of always being on time; need I say he was always there before me. We discussed many things and before he became more interested in the coldwater side of our hobby he had helped me much in my interest in livebearers. He never forced himself or his opinions on anyone though one always respected them as they sprang from a profound knowledge of his subject. He was a member of our "20 Club," but through other commitments his visits were all too rare. When he did come, however, we proffered questions which happily led to him falling easily into an instructive talk. I think he retained the name Rob, as when we were together I used the more usual abbreviation of Bob for our identical Christian name. Rob had the rare knack of absorbing facts about the most abstruse problems and then imparting them to his listeners in easily understood terms. He made things seem too easy at times. I suspect that his one failure was when he tried to teach me the rudiments of Genetics. I became bogged down

under a mass of X's and Y's, genes and chromosomes etc., and had to ask for a breathing space, though I am sure the fault lay with the pupil and not the teacher. It is said that all great men have a woman behind them, and Rob was no exception to this. At all times he received support and encouragement in his studies and changes of occupation from Mrs. Affleck, even to the extent of his trip to Australia, which I reminded him at the time would only be a visit. We shall all miss his quiet unruffled manner very much. He had, in his relatively short life, achieved more than most of us could hope to do had we another 50 years to live.

Goodbye, Rob, we shall never forget or replace you, and our sympathies go out in no small measure to your wife and family.

R. G. Mealand

DR. R. J. AFFLECK, or "Rob" as he was known to his intimates, started his professional life as a teacher in handicrafts; but this did not satisfy his great urge for research and he started and maintained for the next 25 years a relentless effort to qualify himself in biology, and it is a

tragic irony that he should die so soon after he had reached his goal. No doubt his studies into the small hours of the morning, after a day's work at the Teachers' Training College where he was employed as a tutor, took its toll.

He was a shy sort of man who did not court the limelight. To his friends he was helpful and cheerful. As president and technical adviser to the Goldfish Society of Great Britain he applied himself with the same authority and diligence that he gave to everything he touched, and the Society has suffered a grievous loss. His strictly scientific approach to goldfish keeping will be long remembered by the members and readers, who have every cause to be grateful to him for raising the hobby to so high a level. He leaves a widow and four children to mourn his loss.

L. C. Betts

BOB APFLECK was our president and very dear friend. Together with Les Betts, he launched the Goldfish Society of Great Britain, and has been its guide and scientific adviser. Members all knew him for his lectures, his technical papers and his gentle good humour. Those on our committee know of the tremendous amount of work he did behind the scenes. At the same time he was pursuing his parallel private research for which he was awarded his Ph.D. He was the foremost authority on goldfish in the world. His loss is a tremendous shock to the Society in many directions. He had just before his death prepared the January issue of the *G.S.G.B. Bulletin* and had asked to be relieved of the editorial work.

The Society owes a great debt to Bob and I feel that a practical way to acknowledge it would be to remember that he leaves a widow and four children of school age. I would like therefore to start a Memorial Fund. Would those who wish to subscribe, kindly send their contributions for the R. J. Affleck Memorial Fund to our treasurer, Mr. G. H. L. O'Neill, 68, Lavender Vale, Wallington, Surrey.

M. D. Cluse,

Chairman, Goldfish Society of Great Britain

I KNEW Dr. R. J. Affleck for only 5 short years. I first met him when I joined the staff of the Borough Polytechnic in September, 1955, where he was already Lecturer in Zoology. My first impression of him was that he was a kind, gentle, considerate man who had the happy knack of putting one at one's ease the moment one met him. This impression, gained in the nervousness of my first teaching post, remained with me throughout the whole of our friendship. Later, I was to see more clearly how easily he endorsed himself in others, when he introduced me to the members of the Goldfish Society of Great Britain, of which he was the president at the time of his death. I was able to observe how he went about the room making sure that no one was overlooked, and that everyone who asked him a question received an unbarred reply. As I worked with him I came to learn that with his gentleness of manner there went a single-mindedness, honesty and humility.

When I first knew him he already possessed the M.Sc. degree and was working for his Ph.D. To do this, in addition to fulfilling his duties as a lecturer, necessitated a great deal of hard, tedious and exacting work over many long hours, but then Bob Affleck did not avoid hard work. In many conversations with me he praised industry and persistence and frequently commented that very often insufficient credit was given to a pupil for possessing these qualities.

It was not only in intellectual pursuits that he wholeheartedly applied himself and excelled; he was equally at home with a shovel "knocking up" cement to build another

pond, or with a hammer and saw constructing a fish house. If to do a job he required to know some special technique, he learnt that technique and not only learnt it but became a master of it. Whatever he did, he did with consummate skill. His zoological drawings, even the most complex, had a delightful clarity and he had considerable skill as a water-colour artist. His first love, however, was the study of fishes, in particular of course, the goldfish, although I was given to understand by him that he had also kept and shown guppies. Indeed, the last scientific paper that he wrote had the guppy as its subject.

He was an expert in his chosen field of study and a first-class teacher. His lectures were always lucid and devoid of superfluity, he translated technical jargon into easily understood terms, without ever giving the impression that he was talking down to his audience. He gave the aquarists who sat before him sound practical instruction which members of the Goldfish Society and many others have recognised as being of real value. His lectures often placed him at the centre of controversy, especially on topics such as goldfish show standards, but however hard-pressed he would never compromise on scientific fact. This, at times, may have led him to be misunderstood by those of us who were not so well versed in the subject. Further investigation on our part invariably caused us to realise that Bob was correct.

To conclude this brief appraisal of Dr. Affleck it should be said that the gaining of his Ph.D. in the closing months of 1960 was not the end of his work, indeed it was only the beginning. He left behind, according to one conservative estimate, about 20 years' work. This was typical of the fertility of Dr. Affleck's mind, and indicative of the extent of the loss to zoological science.

R. E. Ison, B.Sc., M.I.Biol.

Technical secretary, Goldfish Society of Great Britain

Cacti in the Fish House

ALTHOUGH nearly all cacti can flower in this country there are some species which are very easy to manage whereas others are not likely to flower unless in a greenhouse and when fairly large. One of the best of the genera to accommodate and flower is *Rebutia*. These plants remain small and can flower at 2 years from seed. The most common one is *R. vinouscula*, which has a ring of flowers round the base and these are about an inch wide, like small tomato-red trumpets. A plant an inch across can have a dozen or more flowers each year. There are many species of *Rebutia*, mostly with red or similar flowers but a few are yellow such as *R. marssonii* and *R. heistergramma*.

THE repotting of cacti is a most important job, as if they are left too long in a pot the roots grow to such an extent that they choke up the drainage hole and become so impacted that there is no air in the soil. Also all the nourishment will have been used up and so the plant does not grow or flower. Young plants can be repotted each year but older plants can go 2 years as long as they have not made so much growth that they have reached the side of the pot. Small plants should be placed in pots of a size to allow a half-inch from the plant to the side of the pot and larger plants can have an inch of space left. A good potting soil for cacti is the John Innes potting soil no. 1, to which is added one-sixth part of river washed grit to make the soil more porous.

The Garden Pond in February—by ASTILBES

AS this month will be a quiet one for most pondkeepers it will be well to contemplate what can be done to improve conditions in the coming season. Without doubt the chief bogbear to successful pondkeeping is the excessive growth of algae. The free-floating type greens up the water so that the inhabitants cannot be seen and the filamentous type strangles the growth of choice plant specimens and makes the pond look very unsightly. Can anything be done to assist in keeping the water clear? Certainly there is plenty that can be done by the pondkeeper to improve matters.

Let us see what happens when most of the light is excluded from water in a pond. Any green algae will at once die out and the growth of the blanket weed will cease. Give any open water plenty of light with little or no water plants and it will very soon become infested with algae. What are the methods to adopt to try to get the desired clear water? Are plants necessary? I say with emphasis they certainly are. Apart from the ultimate clearing of the water the presence of water plants enhances the look of the pond and they provide food, shelter and spawning material for the fishes. The fine balance necessary for ideal conditions is not easily or quickly obtained.

It is scarcely possible to make a pond of any size and have it functioning immediately in a perfect condition. It is, however, true that to start right is to continue in the right lines as long as reasonable care is taken afterwards. Let us consider the different types of water plants and what they do to assist in keeping the water clear and in good condition. Water plants can be considered in three sections: the underwater oxygenating ones, the ones with leaves floating



Photo—
Laurence E. Perkins
Oxygenating plant for the pond: *Potamogeton denius*



Photo—
W. J. Howe
Surface leaves of frogbit form a suitable covering for the small pond.

on the surface and those pond-side subjects or bog plants which grow in or near the water and send their leaves and flowers above the water.

The first are important, as not only do they give off oxygen in good light but they are able to use up much of the waste matter in the pond, not only in the droppings of the fishes but also surplus decaying matter in the pond. This is not the only reason for their inclusion, for as a matter of fact as far as oxygenation of the water is concerned they could be omitted from the open pond and plenty of oxygen would find its way into the water through the large expanse of surface area. Oxygenating plants have an effect of choking out much of the free-floating algae. If a pond has a dense growth of, say, *Elodea canadensis*, it is probable that the water will remain as clear as the proverbial gin. This then is one way to obtain the desired effect.

Now let us consider the second type of water plant, the water-lily type. These plants send their handsome leaves over the surface of the water and act as splendid sunshades. Beneath such shade the fishes love to hide and beneath these leaves a clear water usually abides. If a pond surface becomes completely covered with leaves, so shutting out most of the light, it will not be long before all the algae is choked out. However, with too many leaves the problem is that no water or fishes are visible! The endeavour of the pondkeeper must therefore be to have sufficient water lilies, or similar plants, to keep the water clear but not enough to cover too much of the surface.

What of the third type of plant? These are largely

ornamental and serve little purpose in keeping the water pure. If they are growing actually in the water then their roots can assist in keeping down some of the decaying matter, but if they are growing out of the water then their use is confined to ornamentation and perhaps the provision of a little shade.

Most freshly made ponds are sure to become green quickly because the water is probably completely unshaded and so it is necessary for the pondkeeper to have patience; provided that the water plants grow on well a better condition will soon appear. It is not often much use changing the water frequently if it becomes green, for if the water plants are as before the water will soon green up again. But remember that if the water gets too green then the desired water plants are being crowded out or partially starved by the algae, which after all are other plant forms. Therefore if the water is changed occasionally the water plants have a good chance of growing, gaining in strength and so being able to choke out the algae.

To sum up then, the more growing water plants in the pond the clearer is the water likely to remain. Water lilies are not only valuable in improving the look of the pond with their handsome flowers but they provide plenty of shade to choke much of the algae. As for the bog plants, their use is mainly for ornamentation, but nevertheless their use is a decided must if a natural type pond is required.



Photo:

W. J. Howe

The large leaves of the yellow water lily shade the pond from the sun.

DWARF GOLDEN BARBS

by JAS. STOTT

I HAVE heard some aquarists refer to the dwarf golden barb (*Barbus gulosus*) as "a bit on the dull side," or perhaps in other words and say "lacking in colour." Well, if you compare it with some of the other members of the barb family such as the rigger barb (which is my favourite barb, by the way) or the tiger barb, for instance, then, perhaps, one might have to agree that colour is lacking to a certain extent. Nevertheless, there is something about this little fish which attracts attention; it has dainty ways and a quiet, peaceful disposition.

The upper part of the body is golden-brown, splashed with black markings, and the underpart a silvery grey. The fins are faintly yellow with the leading edge of the dorsal black-lined and the anal a deep brown at the base. Both male and female have the same colouring, more or less, but the female may be a shade lighter when in breeding condition, although, of course, at this time she is fuller in the body than the male. In size the female is a little longer than the male, which is about an inch and a quarter, with the female around three-eighths of an inch longer.

They are not difficult to breed once they are brought to condition, for which a temperature of around 75°F is needed and a diet consisting of plenty of live food such as *Daphnia*, Grindal worms and finely shredded earthworm, for these fish have small mouths. A tank about 18 in. by 10 in. by 10 in. will be large enough for a breeding aquarium but only shallow water should be used, for these fish are keen egg-scratchers. A depth of 5 inches of water and thickly planted with some plants such as *Myriophyllum* or willow moss is a good method of setting up the breeding tank. The breeding pair should be removed from the tank as soon as they have finished spawning.

Infusoria should be supplied 24 hours after the fry have become free-swimming, by which time the yolk sac will have been absorbed. The third or fourth week seems to be

a danger period for the fry of *Barbus gulosus* when bred under aquarium conditions, but the addition of some "green water" at this time appears to alleviate the position. Add this in small quantities at a time, making sure that it is at the same temperature as the water in the fry tank.

As growth permits give the youngsters larger live food, and micro worm seems to be a good follow-on from Infusoria. Later brine shrimps can be included in the feeding; then gradually begin to introduce a little fine, dried shrimp in between the live foods to give them a certain amount of dry feeding.

Possessing a peaceful nature, this barb is quite suitable for a community tank and looks well in company with white cloud mountain minnows, *Pristella* and zebrafish.

TWENTY-FIFTH ANNIVERSARY

THIS year sees the twenty-fifth birthday of Hykro Fish Foods, started in 1936 by Mr. Høyrup Jensen of Denmark. Hykro "Flakes" were becoming well known by the time of outbreak of the last world war, but this event caused the business to close for the duration. Mr. Høyrup Jensen became a member of the Danish resistance movement but was eventually captured by the enemy and interned. After the war he began to reorganise his business and despite initial difficulties with import restrictions etc. the original foods and other Hykro sales lines were made available to aquarists in most countries all over the world.

Some Problems of Vivarium Construction

by BARRY R. JAMES

THROUGHOUT the many years that I have been a student of Herpetology, one thing has always puzzled me. Namely, the sparse and desolate appearance of other people's vivaria.

Aquarists, especially those specialising in tropical species, invariably take great pride in arranging and maintaining their tanks so as to resemble the natural habitat of their pets. Rock strata, plants, different coloured gravels and other devices are all used to create, as near as possible in a small space, the illusion of a section of the pond or river bed. The result, if imaginatively and sensibly arranged, is both pleasing to the eye and beneficial to the inmates.

Herpetologists, however, seem to limit their ingenuity to an aquarium containing a layer of gravel, a dish of water and a piece of rock or bark. In my opinion a tastefully furnished vivarium containing living plants can give as much pleasure and needs as little attention as a tropical-fish tank.

Aquaria, unless provided with some form of drainage, are invariably unsatisfactory for use as vivaria, except for aquatic species such as terrapins and frogs. Just as aquaria are intended to house creatures whose natural environment is water so terrariums must be constructed for the specialised needs of terrestrial species.

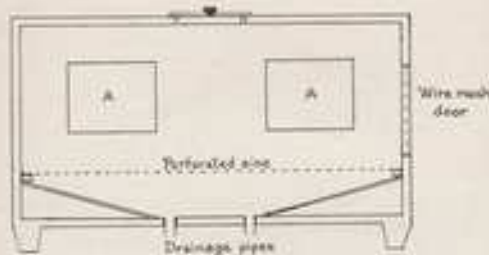
In my experience the enemy of reptiles is bad drainage, which leads to stagnation and a perfect breeding ground for disease. Living plants also suffer in these conditions and possibly it is the disappointment of seeing plants dying off in their aquaria that has discouraged vivarium-keepers from adding a little bit of greenery to their cases.

It is possible to build a vivarium incorporating all the factors necessary for the successful maintenance of the inmates and I shall describe the construction of one of my own cases.

I commenced by buying a large second-hand television cabinet, the dimensions of which were 3 ft. 6 in. by 1 ft. 6 in. by 1 ft. 10 in., and which cost 10 shillings. I stripped all the interior fittings and covered the interior with three coats of good white enamel paint. I fitted a door, constructed from a conveniently sized picture frame, at one end. A piece of wire mesh cut to size and nailed on the frame completed the door and satisfied the need for ventilation and access to the interior of the completed case. The large holes present in the back of the television cabinet I glazed with 24 oz. glass.

The next and probably the most important step was the installation of the drainage system. I started by boring two parallel lines of holes in the centre of the base. I then cut half-inch sections of copper pipe and fitted them into the holes with putty. This manoeuvre was to allow the escape of the excess water that would accumulate in the bottom of the case. Next I cut a large sheet of plywood to fit the inside of the case and then bisected it along its length. The two halves were then fitted in position at an angle of approximately 33 degrees to the base with screws, as shown in the diagram. The boards were waterproofed with enamel paint and the edges sealed with putty where they were fixed to the sides of the case.

A large wooden frame was made to fit the inside of the



Sectional view of the vivarium; positions of the two windows (A,A) are indicated at the back of the case

case and a sheet of perforated zinc was nailed to it. This virtually completed the drainage system. All that remained was to fix a front board in position and seal up the joint with the drainage boards.

Illumination was provided by means of two 100 watt striplights and heating by a small 100 watt greenhouse heater, which is suspended from the roof of the case by a hook. I glazed the front of the case with a single sheet of 24 oz. glass in such a way as to allow easy removal for cleaning etc.

Furnishing

The compost used will, of course, vary with the species to be housed. In this particular instance I intended to keep a pair of calotes, various tree frogs and ground toads. My base mixture was two parts of peat, two parts of loam, one part of leaf mould, one part of coarse sand and a little powdered fertiliser.

To avoid the mixture being washed away I first placed a layer of moss over the whole of the interior, about half an inch deep. I then put in my compost about 7 inches deep at the back, sloping to an inch or so in the front.

A large mossy log obtained from a nearby wood was embedded lengthways into the bank of base mixture. One or two pieces of stratified rock, a large branch and a small plastic bowl disguised with cement completed the more solid furnishings. I then introduced my plants and arranged them to my satisfaction.

The art of arrangement is the same as that required for aquascapes; namely, that the larger plants and rocks etc. are placed at the back and the smaller specimens at the front, thus preventing the reptiles from being hidden behind a mass of vegetation.

Other types of vivaria

The principles outlined above will apply equally to other types of miniature landscapes, except that for desert-living species more sand and no peat will be used in the compost. Most cacti I have found will do well under such conditions provided that they are not overwatered in winter.

Here is a short list of house plants which, as a florist,

I can recommend as being particularly suited for the close confines of vivaria.

Temperate vivaria (where the temperature does not exceed 70° F): 1, *Hedera helix* (English ivy); 2, *Hedera canariensis*; 3, *Chlorophytum*; 4, hart's-tongue and other evergreen ferns and asparagus fern.

Desert vivaria: 1, Cacti such as *Opuntia*, *Mammillaria* etc.; 2, *Santiveria*.

Tropical vivaria (temperature between 70° and 80° F): 1, *Rhizanthus rhomboides*; 2, *Santiveria*; 3, *Philodendron scandens*; 4, *Ficus elastica*; 5, *Vriesea splendens*; 6, *Holcista*; 7, asparagus fern; 8, small palms; 9, *Tradescantia*.

Information about the individual care of these plants can be obtained from a good florist, although many nurserymen attach printed labels giving the country of origin and hints on the care of the specimen purchased.

I hope that these brief suggestions may encourage some of our more conservative vivarium-keepers to experiment a little with the lay-out of their cases and gain a great deal more satisfaction in including a tiny portion of an exotic landscape in their home.

PET ANIMALS ACT, 1951

by FIREMOUTH

THE start of the year means renewal of one licence or another to most of us, and it was quite a surprise, on mentioning that my Pet Licence needed renewing, to find that, although this Act has been with us for over 10 years, very few aquarists were even aware there was such a thing!

The Pet Animals Act, 1951, affects all those who are in the habit of selling fishes and it is as well to be aware of its implications. Like most Government Acts it is not in some ways easy to understand, and this is an effort to try and simplify it for you.

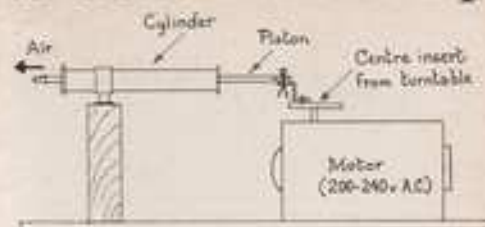
Section 7 of the Act states that anyone who keeps and sells fishes, reptiles or amphibians by way of business is affected, and the premises from which he operates (even if they are his own home) become a "Pet Shop," which must be registered as laid down by the Act.

A person who merely keeps and sells pedigree animals (fishes etc.) pedigree animal means one whose breeding makes it eligible for registration with a recognised club or society keeping a register of animals for that particular purpose) or their young will not have to register so long as he is not running a business (business is not clearly defined—probably an undertaking from which all or a considerable part of one's income is derived, where one renders an account to H.M. Inspector of Taxes in accordance with "Schedule D" of the Finance Act, 1918). Further exemption, even if you are carrying on a business of selling fishes, from the Act may be if the fishes you sell were originally bought or acquired by you for breeding stock or show specimens; then later finding them not suitable for that purpose, you now make a "business" of selling them. Your local council must agree this is in fact what you are doing.

If this Act does affect you then you must apply to your Local Council for a licence to keep a "Pet Shop", and this will cost you 10 shillings. Before they grant one the Council will require that you fulfil certain conditions (too numerous to mention here), but they are all in the H.M. Stationery Office leaflet, reference 14 & 15 Gen. 6 (Ch 35), price 3d.

The licences are granted at the discretion of the Council and are valid for 1 year. They will never be granted to street vendors. One important feature is that they give the authorities power to instruct any of their officers or veterinary surgeons to inspect your premises.

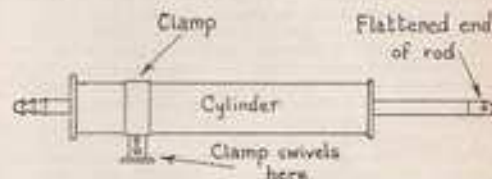
A Piston Air Pump



Side view of the piston air pump

A CHEAP, quiet and reliable piston pump, which will supply air to a number of tanks, may be easily made by anyone possessing a bicycle pump and an old, single-speed electric gramophone motor of the type which normally has a regulator allowing it to run at between 45 and 85 rev./min.

The pump cylinder is cut down to about 7 inches in length, and the piston an inch or so longer to allow for flattening and drilling of its end to take the split pin which connects it to the crank piece. A clamp is fitted tightly to the cylinder but has a loose separate portion to allow the rotary movement of the cylinder.



The cylinder is made from a shortened bicycle pump and fitted with a clamp that allows it to swivel from side to side with the rotary movement of the gramophone turntable

The only critical measurement is that of the crank (made from a bent piece of Meccano strip), which must be bent to give a full movement of the piston in the cylinder, without allowing it to catch at either end.

The air-outlet connection was made from a bicycle tyre valve with the valve tubing portion sawn off, and a brass serrated piece soldered in place, but a football pump adaptor is quite suitable. From here the air may be taken to a "kettle" arrangement if a steady flow is desired, or to a double male-socket connection fastened to the baseboard so that there is no movement in the air line to the tanks.

Remember to keep the piston and other moving parts well oiled, and always use three-pin electrical supplies; earth the metal body of the motor and use waterproof supply cable and connections.

J. G. BUSTON

ERRATUM

We thank those readers who have written to point out that the upper colour picture on page 209 in our January issue had an incorrect caption to it. The pair of fish shown in the picture are niggee or black ruby barb (*Darba nigrofasciata*).

Tropical Fish Breeding for Beginners

by C. WRIGHT

IN the November issue the main problem of installing and maintaining your first aquarium was dealt with and I hope that you have gained some experience in the keeping of the fishes and with it the urge to breed a few of your own. Believe me, it is an exciting moment when you see the first fry being born.

First I shall deal with the viviparous fishes, known to you as the livebearers. The egglayers, oviparous fishes, will be dealt with later. Conditions applicable to the breeding of one of the livebearers will apply to the majority, there being only one or two exceptions which will be discussed separately.

Before we can talk about breeding our fishes we must know how to sex livebearers. Look at your fish as they swim past you; at the rear of the body, on the underside you will see a single fin. This is the anal fin and is fan-shaped in the female; in the male this fin looks like a spike pointing towards the tail (caudal fin). This spike is the male organ, known as the intromittent fin, and it can be moved to point in any direction. Watch a pair of livebearers swim side by side and you will see what I mean; this fin injects the spermatozoa into the female to fertilise the eggs in her body. From this time it is from 4 to 5 weeks before the first young appear, and even if left entirely on her own the female will have another three or four families at intervals of 4 to 5 weeks.

I am going to take it for granted that you have your tank set up and heated as described previously, either by oil, gas or electricity. The interior must be very thickly planted as the female will take a great delight in eating her own young if she can see them. If we give them plenty of cover they can get out of harm's way. There are several ways of planting a tank for this purpose and several types of plants which can be used, but I am starting with plants which you may have surplus from your community aquarium, such as *Vallisneria spiralis* or *V. spiralis*, and I am also taking it for granted that, like nearly all do, you are starting with a 14 in. by 8 in. by 8 in. aquarium. Remember that the same rules and conditions apply whatever the size, and the larger the tank the better.

There are three methods of planting. One is to have aquarium sand all over the base, as described for the first tank. Number two method is to use small square bakelite pots, which are filled with sand; these pots are about 4 inches square by 1 inch deep, and can be purchased from most aquatic dealers. The third method is to use a strip of glass about 1 inch wide fixed across the base of the tank about 2 inches from the front and to have the sand behind that sloping up to about 2 or 3 inches at the back.

My own favourite method is the first one. Into the sand covering the base as many *Vallisneria* plants as possible should be planted, at least one plant to every 2 square inches. These plants should reach the top of the water, the level of which can be lowered as required with great advantage, as the first thing the babies want is to break the water surface for air. In deep water I have seen them die from sheer exhaustion. It is not always realised or described, that young livebearers are born with that important organ, the swim bladder (by which they maintain their

balance), in a collapsed state, and that this must be filled with air as soon as possible after birth, which entails a very tiring and exhausting journey to the water surface. If the water is too deep or there are no plants to assist, you will always have that fish swimming in jerky movements or grovelling along the bottom. This is the main reason why I prefer plants that reach the surface; it is surprising how often the young fish will rest on the plants on their first journey up. This method of close planting can also be used with the plant pots, with the added advantage of the plants being easily removed for tank-cleaning purposes. The third method encourages most of the sediment which accumulates to fall to the front of the aquarium, from where it can be siphoned without disturbing or losing some of the sand; but the disadvantage is that in this area there is no plant life in which the young can hide, although this can be rectified with two or three bunches of *Fornia* (willow moss) when obtainable. In each method of planting some duckweed, *Riccia* or bladderwort can be floated on the water surface, where the baby fish spend a lot of their time, but do not cover the surface entirely. Remember that the fish have to be fed on a fine food, which must spread out on the surface to give the fish a chance to reach it without using too much of their small amount of energy. Attention to this will give you strong and healthy fish.

When you have decided which of these three methods you will adopt the aquarium should be set up and left for at the very least a week. The longer the better, as this will



Photo

Lawrence E. Perkins

Pair of red swordtails (male, left)

give the plants time to get firmly rooted and, if long enough, to send out new shoots. The importance of this can be seen after a tank has been set up for a month or two: take a look at the back of the tank, and although the surface of the sand may be dirty you will find that where the roots of the plants are, the sand is amazingly clean because the plants thrive on the humus from the excreta of the fish.

Now we can take a look at the fish and see if there is a female nearly ready to deliver her young and therefore suitable to be placed in the breeding aquarium. I know very well that there will be cries of "Never move fish that are gravid," but I have used the following method for over 20 years without a casualty. Place the net in the tank and leave it there for 15 minutes or more. Check the temperature of the breeding tank and bring it up to about 2° F higher than the water the fish are in. By then, when you take up your net the fish will be used to seeing it in the water and will not be so scary when you move it about. Catch the female you want, gently, taking your time, then lower the net and fish into the new quarters so that she can swim out of the net in her own time. Do not tip the fish out of the net into the water, that is when the shock can kill a gravid female. This method applies to all livebearers, including mollies; this fish is more susceptible to shock at this period than any others of the livebearer species. Temperature requirement varies with different fishes; I find that for the platys 72° to 75° F is ideal but for mollies 75° to 78° F is better.

How can you tell when a female is ready? There are two ways. First is by noting the fullness of the body, but the best and correct way is to view the female from the side. At the rear of the body near the vent you will see a brownish patch. This is known as the gravid spot and, as time is getting nearer to the birth of the fry, so the patch becomes darker and about 3 days before they are born a close scrutiny will reveal darker spots over this area that look like eyes. These are the embryos waiting to be born. In mollies and black platys the gravid spot is not visible, so you are left only with body shape to guide you. The body of a female molly looks almost square about 2 days before she delivers her young. You will be surprised how easy it is to pick them out after one or two tries.

If it is possible to put the female into the breeding tank a week or two before the birth I strongly advocate it, as this gives her a chance to settle in to her new home and you a chance to give her that little extra feeding of live foods, or a small piece of uncooked cod or beef can be suspended in the tank for 2 or 3 hours and then removed. You will be surprised at the variety of foods they will enjoy; even the eggs on the underside of a prawn are relished by most fishes. Give her a full day in the breeding tank after she starts to deliver her young, then put her back into her old tank, using the same method as before. If the aquarium has been planted thickly as suggested you should be the proud owner of some young fish, anything from six to 60 in number, and these are able to take dried food from birth but it must be fine. This should not be difficult, as there are a large number of fry foods on the market; all are good so ask your dealer which one he favours and when you tell him what fish it is for it is quite likely that he will offer to buy them from you when they are old enough. But for goodness' sake don't expect him to pay you the price that you paid him for the parents! Having got your food try to feed them as many times a day as possible with just a little at a time; little and often is the golden rule from now on. After about a week they can be fed on small live *Daphnia*, micro worms, Grindal worms and later *Tubifex* worms. At this stage you will find that it is impossible to keep a tank crystal clear; if it is clear then the young are not getting sufficient food, so we must be prepared to siphon away any uneaten food off the bottom, every other day at least.

If your tank is thickly planted and you care to, you can



Photo:

Laurence E. Perkins

Male guppy. The modified anal fin or intra-ventral organ characteristic of the male livebearer can be seen at the point of decrease in depth of the body of the fish.

leave the parent fish in with the babies, because in 4 or 5 weeks she will deliver another family, but by this time the first one should be about three-quarters of an inch long and must be transferred to a larger aquarium to grow on.

What you have been reading applies to all the common livebearers. There are one or two others, including the half-beak, that require different conditions, but these are more advanced and will be dealt with at a later date. In the meantime read all you can about the fish that you have. Remember there are various ways of breeding fish and all writers and breeders like myself can give you only the results of their own experiences, which can guide a beginner into channels from which he can draw his own conclusions without suffering serious losses as many of us did (when there were only a couple of text-books, if you were lucky enough to be able to get them from the public library).



John Meane
"Here - it's for you"

AQUARIST'S Notebook

by

RAYMOND YATES



A REFRESHING little magazine from "down under" is the *New Zealand Aquarist*, which is published in Christchurch and issued monthly as the official organ of the Federation of New Zealand Aquatic Societies. Now in its eighth year, this publication is well printed and runs to 20 pages, only 3 of which contain advertising matter; there is a coloured cover and line drawings, with an occasional photograph. It is already sent on an exchange basis to aquarium clubs in other countries but there may be others in Britain, Canada or the U.S.A. who would like to exchange with it; the secretary is Mrs. E. G. Bradley, 2, Deal Street, Timaru, New Zealand.

A query how to prevent a couple of tiger barbs from indulging in fin-nipping is answered in the magazine by the suggestion that half a dozen should be kept. This is true; six to a dozen tigers make a wonderful show and are too busy looking which way the shoal is going to indulge in any vices. An article describes how phenacetol is used in N.Z. to combat fungus, as here, and stresses how lethal this chemical can be (to fishes) and that it is important to keep to exact doses. A stock solution of 1 millilitre (ml.) in 99 ml. of distilled water is made and from this 10 to 20 ml. is used per litre of water; the smaller the amount the safer. It is better to put the diseased fish in a small jar for treatment, which is soon completed, as the disease clears almost overnight. Tanks should not be treated with this chemical except when used in correct proportions as suggested by the suppliers.

There is an interesting (and quite new to me) account of how to eliminate snails by a N.Z. hobbyist, Mr. R. Sang. After much experimenting he found a way to eliminate all snails completely by the use of liquid (not powder) mercuric chloride, which is sold for the extermination of garden snails and pests. A proportion of 2 fluid ounces to 4 gallons of water will kill all snails and leave plant life unaffected, it is claimed. It was used in the aquarium after all fishes had been removed, and it was left for a week; heavy aeration was used as the chemical tends to sink. This solution is toxic to fishes and must be cleared from an aquarium without trace before fishes can be returned. Mr. Sang's method seems a little drastic for most of us but he goes on to say that every plant he introduces into his tanks is soaked for at least a week in the solution to keep out intruders. His success with egg-layers in tanks so treated seems to prove his point.

What is probably the chilliest museum in U.S.A. is in a Seattle cold-storage plant. It contains some 200 frozen fishes, including almost every strange variety found in the North Pacific. All these specimens were given to Howard Langrud, a Port employee, by fishermen bringing in catches. He put each fish into what was thought to be a natural position and then placed it in the section 40° below zero overnight. The result was a succession of brick-hard specimens, ready to be mounted in a nearby corridor at 22° below freezing. Eskimos might enjoy a long afternoon in this museum but ordinary spectators find themselves shivering after only 5 minutes of the free exhibition! When duties permit, Mr. Langrud, suitably clad, takes visitors through his chill gallery. A quiet man, with a Norwegian accent, he tells how he froze his first specimen, a 350 pounds halibut, in 1919. To-day, the halibut looks much as it did 40 years ago. Around it on the walls and ceiling are a freak ray, a bugle fish and seven varieties of shark. A porpoise is permanently frozen in a graceful leap, a tiger shark wears a toothful grin and a sea-lion is stiffened in the

act of eating a herring. The curator tends to underestimate. Instead of showing pride in his 500 pounds sunfish or his 16 foot baby whale he may apologise for not having a two-headed rattfish in his collection. He does no fishing himself and worries only in case some stoppage in the machinery should reduce his collection to mush. Ichthyologists are still unable to identify one queer fish which he has: a 2 footer with a bulge above the head. Mr. Langrud is not defeated, however; a realist himself, he has given it the unscientific but descriptive name of "highbrow."

My apologies to those aquarists who asked for me at last year's British Aquarists' Festival. For the first time since its inception I was not there, because of ill-health, and readers will therefore understand why my usual views and comments on the show are missing.

Mr. I. M. Evans, keeper of biology at Leicester Museum and Art Gallery, reminded me the other day that in my recent notes on public aquariums I had omitted to mention the one in the museum at Leicester. There are nine 50 gallons and two 500 gallons tanks as well as a number of smaller ones and vivaria. It is safe to say that at any one time about half the British freshwater fishes are on view as well as reptiles and amphibians. Mr. Evans is always delighted to hear from local aquarists as none of his staff is an expert aquarist and any hints from visitors would be of value in keeping up standards. In particular, Mr. Evans would welcome any gifts of British native fishes. What about it, you Leicester and district enthusiasts?

Barrow Aquarists Society last year organised a trip to Chester Zoo, and got the railways to provide a special train. This trip of well over 80 miles proved to be for the Society the event of the year. Other societies who have not visited Chester Zoo would find this a worthwhile venture for the spring or summer. There are the delights of Chester itself, with its Roman remains, timbered houses, museum, castle, the ancient rows, wonderful shops and the river, and the Zoo is very up-to-date indeed. The animals are mostly shown in semi-natural surroundings, the flower gardens are extensive and brilliantly planned and the catering is excellent. The Aquarium is illuminated by daylight, with tropical-aquarium heating by copper tubes which certainly do not prove lethal, and feeding in summer is mainly with *Daphnia* from the many inland waterways which wind in and out of the gardens. Barrow club members were astonished to see some splendid sunset platys, really vivid specimens, and then to discover that they were used as live food!

The inter-society postal quiz organised by Barrow has proved a great success and already includes the Portsmouth, Lancaster, Oxford, Lowestoft, Basingstoke and Middleton (Manchester) clubs. This year Merseyside and the Scottish Aquarium Society are to be included and possibly Southampton. Any clubs wanting details please write to the secretary, Mr. K. Ralph, 8, Malton Crescent, Barrow-in-Furness, Lancs. The club magazine is as lively as ever. In it one reads of the unfortunate experience of a member who dared to ask at a club meeting for suggestions from other members on how to cure an angel fish which swam

around in circles and at an angle of 45 degrees or less. Advice and suggestions were quickly forthcoming: the tank it was born in had a slope, its mother had been born on a hill, it was full of spawn on one side only, the plant leaves in the tank should be placed in a horizontal position so that it could lay its eggs, lead weights should be fastened to its anal fin, it was the result of mother-in-law's cooking, food was given with too much spirit, by tying a cork to its dorsal fin and, Barrow being the home of submarine shipbuilding, the Kingston valve had stuck, or try blowing main ballast and flood port trim tanks. Since this the angel's partner had died, but further remarks have been censored.

There are several kinds of fishy cross words, many of which will be familiar to hobbyists who have been in the hobby any length of time, have taken much part in shows or organised club activities. However, I have in mind the now famous black and white squares with clues down and across. The *Aquarist* crossword is well known; one not so well known appears frequently in the fortnightly newsletter of the Merseyside A.S. Other societies may be interested to know this. The club secretary is Mr. W. T. Kelly, 31, Saddleby Street, Liverpool 17.

In my ignorance I used to believe that animal keepers were only found at the zoo. It seems that this is quite incorrect. In fact pet keepers can be divided into two classes: those who are animal lovers and those who are best termed animal keepers. Most pet fanciers will claim to belong to the former although it would probably be true to say that it is the second section that has most adherents. There are people who demonstrate their love for their pets ad nauseam, such as the lady with her lap dog in the bus and the elderly spinster with a houseful of cats. Many pet owners come into the second category merely because of their abysmal ignorance of how to look after their charge or charges. How about the fish fancier? Hobbyists know their individual fishes but, with rare exceptions, one fish is very like another of its species and it is really hard to get attached to an actual fish, as distinct from its size, or colour or rarity. If any one fish could worm its way into our hearts it would probably be the goldfish, but even here the individualists are rare. Personally, I have attended to many fishy funerals that one more worries me not at all. I think it is best this way.

I was talking the other day to a chap on the bus who was wearing an *Aquarist* badge in his coat. He was the proud possessor of a 45-gallon tank which housed two pairs of rather different fishes. In one corner there were a pair of jewel fish very busy preparing for and later looking after a family. In the other corner a pair of talking catfish looked upon that area as their own. Both pairs had a home area which was not easy to define but which both knew and respected. A worm dropped into the tank would only be seized by the jewels if it fell in their area. As might be expected, this has been a source of great interest to the hobbyist, although what will happen when the little jewels leave the nest remains to be seen. Many fishes have this territory instinct. Long ago I remember a quite small dwarf cichlid that dashed out, seized an angel by the dorsal, and literally shook it like a terrier shakes a rat.

It is said of angling that it is not what you catch that matters, it is the setting out and the fishing, the expectation. This is probably very true. We all know that it is better to travel than to arrive and that anticipation is better than realisation. This is often true of a jaunt to the local dealer. You set off with eager anticipation, a large Thermos, a mental note of all the fishes you want and in some doubt as to how many to buy, or which species can be safely

mixed etc. Cold reality awaits. The tanks at the shop are worse than Mother Hubbard's cupboard: where are those fishes you had already bought in your mind's eye, the show-winners to be? The dealer mutters something about a fresh shipment of very special fishes due in tomorrow. You laugh hollowly. You know this one. I got so fed up with it that I once rung up a dealer every day for a week asking if the shipment had arrived. I enjoyed it, until the joke got stale. In all trips to dealers the motto should be "Blessed are those that expecteth not for they shall not be disappointed."

Rusty-Back Fern

THE delightful rusty-back fern, *Ceterach officinarum*, frequently grows in great profusion in similar situations to, and often in the company of, the spleenworts. For cultivation in the aquaterrarium it needs an open, porous, limy compost amongst stones and rocks high above water level. Its preference for sun is difficult to cater for, but it will thrive in diffuse, bright light provided that it is watered very sparingly. Its rosettes of leathery, olive-green fronds, with blunt side divisions and shaggy, reddish-brown scales clothing the under surface, are remarkably resistant to drought. One of the great fern experts, the late Charles Drury, collected a toothed variety in Somyra, Asia Minor and kept it for many months in a plain envelope. After its rediscovery therein, the shrivelled remains were put in water and the plant had completely revived and was ready to be planted within a day.

Shown also in the photograph of rock- and wall-loving species is the well-known native hart's-tongue fern, *Phyllitis scolopendrium*. This fern will grow almost anywhere, but the drier the habitat the more restrained its growth, and the smaller its fronds. In fairly heavy shade and with abundant moisture at the roots its shining, bright-green fronds spread themselves on scaly petioles and may reach an overall length of 2 feet. It is admirably suited to life in a water garden and should be planted in shade, near to the pool or stream with its roots in a well-drained compost of two parts of loam, two parts of leaf mould and one part of silver sand.

C. D. SCULTHORPE



Photo: C. D. Sculthorpe
A group of rock-loving ferns suitable for aquaterraria and water garden. Top right: the rusty-back fern. Bottom right: the wall-rue. Centre: maiden-hair spleenwort. Bottom centre: black spleenwort. Bottom left: hart's-tongue fern.

Arum Lily Frogs and the American

by ROBERT BUSTARD

(Photographs by the author)

THIS month I have chosen two species which do well in the vivarium but which seldom receive much publicity. Both when available are likely to cost about 7s. 6d. to 10 shillings each.

Arum lily frogs (*Hyperolius horsthoeki*)

These delightful tiny frogs from South Africa are little more than an inch in length. The ground colour is golden brown above (below it is white) and a pale stripe runs along each side of the body, starting near the nostril and passing just above the eye (see photographs). This stripe is variable, usually being silvery grey or yellow. This is all we see of the frogs at rest but when they are disturbed the limbs quickly appear; the hands, feet and underparts of the thighs are bright pinky-orange.

Arum lily frogs, so called because they are often found resting within the blooms of the arum lily, are long in proportion to their breadth. They are powerful jumpers and can cover about 2 feet at one leap. The toes of the hands and feet are provided with suckers like so many tree frogs (e.g. *Hyla arborea*).

In captivity they are frequently seen sitting several deep; for some reason one frog sits on top of another and it is quite common for me to find three in this position. They do not sit on top of each other at random but each one sits exactly on top of the frog below and always faces

the same way.

The vivarium for them need not be large; mine is 15 in. by 15 in. by 24 in. high and has the ground of damp earth covered with moss. There is a small water dish, a fern and some reeds. In these humid conditions they do well at a temperature of about 60°F. Food is entirely insects as for the European green tree frog.

The marbled rush frog (*Hyperolius marmoratus*) is occasionally available and requires identical treatment. Wide black stripes contrast with the white back.

American toad (*Bufo americanus*)

This is one of the more easily obtained species of American amphibians and does well in the vivarium. It requires similar treatment to our native *Bufo*. The vivarium in which mine were housed was 18 in. by 12 in. by 12 in. and these toads prefer a damp but not wet habitat. The coloration is variable and blends in fairly well with their surroundings, as with many toads. The extent to which this occurs may be judged by the accompanying photograph of two specimens resting on a fallen and partly decayed birch log (*Betula*). Without the shadows they would be well-nigh invisible.

These toads are greedy feeders on any small forms of life. Movement triggers their interest and they will accept earthworms, beetles, grubs, bluebottles etc.



American toads (*Bufo americanus*) at rest on a piece of rotting bark, with which their body colour and pattern harmonises.

Toad



Two arum lily frogs in the alert state, with limbs ready to launch the frog to safety if it is approached



Arum lily frogs rest inside an arum lily (one on the left is "stuck" to the spatix)

THE CLOWN LOACH

by JACK HEMS

THE majority of tropical loaches are full of interest and charm, but the species that appeals most to me is the extraordinarily handsome clown loach, which goes under the formal name of *Botia macracantha*. This enchanting fish is native to the freshwaters of Borneo, and was first introduced to aquarists in this country 23 years ago. Unfortunately, like some other loaches, it has resisted all attempts to breed it in the aquarium.

The basic colour of the clown loach is pale gold, suffused with a delicate shade of pink. Three broad black bars adorn the flattened sides. The first passes over the longish head and through the conspicuous gold-rimmed eyes to the throat. The second girdles the centre of the body. The third is situated near the tail and continues on to the dorsal and anal fins. As a distinct contrast to this striking black and gold colour scheme, the pectoral, ventral and forked caudal fins are marked with vivid orange-red. There are six barbels on the snout and a tiny spine is set in a groove below each eye. Both sexes are coloured alike.

In the wild the clown loach is reputed to reach a length of 12 inches, but few specimens exceed a third of that size when kept in captivity. It has a temperature range of roughly 65° to 95°F, it never attacks or bullies other fishes and usually remains remarkably free from any illness or disease. It is reasonably lively during the day, but is noticeably more active at night.

Normally it takes all its food from the floor of the aquarium, but some specimens, more enterprising than their fellows, will swim excitedly towards the surface when food is introduced and snatch what they can of it as it falls through the water. None the less, the fact remains that as the clown loach is essentially a bottom-dweller it often goes without its proper share of food when it is placed in the company of other fishes. So to guard against its dying of slow starvation, within the space of a few months, it is advisable to drop some food (preferably small worms, or tiny pieces of meat) into the aquarium after dark.

Assuming therefore that the clown loach is kept with fishes as inoffensive as itself, and that it gets sufficient to eat, it can be said, with truth, that it will live for years. As a matter of interest, a clown loach I have now has lived in a community tank for 7 years. It is in robust health.

By nature the clown loach is a timid fish easily scared by any sudden movement in front of its tank. Its immediate reaction to such a happening is always the same: with a rapid flick of its tail it makes for the safety of plant life or rockwork. There it will stay for a short while until it feels all is well. Then out it scurries from its hiding place to continue its search for edible matter lying on, or buried in, the sand.

The clown loach spends its days swimming and resting in turns. When it rests it often assumes such strange postures that the newcomer to tropical fishkeeping not infrequently

Continued at foot of page 234

THE GUPPY—King of Tropical Fishes

Showing, Judging and Pointing

by PETER DENDY

IN the last article I described the method of showing guppies and naturally you will always choose to show your best fish. There are, however, one or two hints that may be given to make sure that your fish scores his best points and perhaps wins you a pin. Jars should be carefully cleaned and polished so that they sparkle; the bottoms should be painted black, which has a surprising effect on the colours of the fish, making the darker hues appear more intense. The fish to be shown should be starved for 24 hours to ensure that it is perky when the judge comes to look at it, though it is obviously a good thing to feed the fish up well for a few weeks before the show.

Guppies are normally taken to shows by their proud breeders in special fish boxes which are padded, to prevent shock and to provide insulation to prevent the water cooling too quickly. Fish can also be sent through the post and I have won several awards with postal entries. This is normally done during the summer to avoid risk of chilling in transit and the guppies are put into a polythene bag holding 9 ounces of water, which is sufficient for three males or two females. The bag is tied off tight and packed in a box which will protect them from shock. My boxes are made of acro balsa wood and lined with several thicknesses of sponge plastic to cushion the polythene bag. The box sent by letter post costs between 1s. 6d. and 2 shillings for postage, depending on its weight.

Entries for shows abroad are sent by air and are usually assembled at a central point and packed into a special transit box ready for delivery to London Airport. Foreign shows often call for an exhibit to consist of three males instead of individual fish as is the case in this country.

Classes in a guppy show are based on the standard outlines, illustrations of which accompany this article and are as follows: veiltails, which may be coloured or black; scarftails; lyretails; doublewords; bottomwords; topwords; roundtails; Robson; speartails; pentails; cedertails. There is only one standard outline for females, but they may be grey, gold, goldfaced with gold scales edged with black, coloured with as many colours as possible, albino and the Robson, which is basically grey with black caudal and dorsal fins. The names given to the various standards derive from their caudal shape, with the exception of the Robson male and female, which were produced by a founder member of the Federation of Guppy Breeders Societies after much experimental work and were accordingly named after him.

Judging is carried out on a points basis with a perfect fish being able to score 100. Each part of the fish is separately judged for shape, size and colour and points are awarded accordingly. The official pointings of the F.G.B.S. are: body shape 10 and size 10; caudal fin shape 10 and size 10; dorsal fin shape 10 and size 10; condition 10; department 10; colour of dorsal fin 5; caudal fin 5; body 5; general intensity 5.

The highest-pointed fish wins in its class and may win a silver pin if the points scored are 75 or over, and there are

at least ten fish in the class of one single variety. This rule is varied where classes are announced in advance of the show and two named varieties are grouped together to form one class. A pin can never be awarded when there are more than two varieties in the one class.

As I have mentioned before, the award of a silver pin is much sought after and the pin is made in the likeness of a lyretailed guppy, which is the Federation symbol. On gaining ten pins the breeder is given a gold pin and on achieving 20 pins there is a gold-jewelled pin awarded! This is a much coveted honour and consists of a gold lyretailed guppy with a red-jewelled eye, which may be pinned to the lapel. Federation award cards are issued to the breeders of fish placed in each class, normally down to fourth place, but this may be varied according to the number of fish in the class and in a really large class sixth-place cards can be issued.

There is an open show nearly every month during the summer and sometimes two a month, and additional honours and sometimes cups or rosettes are presented to the best male, best female, best breeder's entry and the best fish in the show. The best fish is chosen by re-judging the winners of all the various classes against each other to find the most outstanding fish and you can be quite proud of yourself if you are awarded best fish in the show.

The Federation of Guppy Breeders Societies is only too ready to welcome new members to the cult of the guppy and as there are sections all over the country there is bound to be one near your home town, so why not write to either of the addresses given below and find out more about this most absorbing little fish.

Journal secretary: Mr. R. Forest-Jones, B.Sc., 5, Park Lane, Old Basing, Basingstoke, Hants. *General secretary:* Mr. B. C. Ashman, 19, Knighton Road, London Road, Romford, Essex.

THE CLOWN LOACH

(continued from page 237)

jumps to the conclusion that it is unwell, or is about to die. For instance, it is not unusual for it to take up a position on its side. Now and then it will be seen standing motionless on its tail in a corner of the aquarium. It uses its fins as supporting props. Even in its swimming it often deviates from the normal; for whereas its customary position is on a horizontal plane, sometimes it bobs up and down in the water as though it is being played on an invisible thread.

Altogether the clown loach is such a colourful and fascinating fish that it deserves a place in every aquarist's collection. I must also add that though it scavenges in the sand, it is less boisterous in its movements than are the better-known catfish, and so does not uproot plant life or cloud the water with stirred-up sediment.

GUPPY STANDARDS.



VEILTAIL.



SCARFTAIL.



TOPSWORD.



DOUBLESWORD.



BOTTOMSWORD.



LYRETAIL.



PINTAIL.



ROBSON.



SPEARTAIL.



ROUNDTAIL.



COFERTAIL.



FEMALES OF ALL TYPES.

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60.

our readers



write

Readers are invited to express their views and opinions on subjects of interest to aquarists. The Editor reserves the right to shorten letters when considered necessary and is not responsible for the opinions expressed by correspondents.

Address letters to The Editor, *The Aquarist*,
The Butts, Half Acre, Brentford, Middlesex

Home Aquaria Competitions

I REFER to your feature "Aquarist's Notebook" in the November issue of your magazine, and in particular to the mention of the Home Aquaria Competition run by the Merseyside Club. I must insist that the Merseyside Club yields all claim to originality in this operation as my Society has run a Home Aquaria Competition for 6 years.

The Competition has proved a great success and gives a good chance of success to the member who cannot carry off prizes from the various shows, as his fishes do not need to be prize-winners and his plants are not required to be botanical masterpieces. The aquaria seen at our shows contain all the best bits of the owners' plants, trimmed and placed to best advantage amongst an arrangement of rocks which would prohibit cleaning and maintenance. The fishes are marvels which have probably been raised under optimum conditions from their own point of view, but under poor circumstances when considered from the decorative aspect. It was decided therefore that the tanks entered in our competition should be real "Home Tanks" and not 9 day wonders.

To qualify, a tank must have been set up for 3 months and only subject to normal maintenance. The plants must all be growing in position and show standards for fishes are ignored; the criterion being a question of attractiveness and fitness. A special dispensation is given in respect of "old-age pensioners," which are ignored by the judges, as members with only one tank cannot be expected to dispose of their older fishes for competition purposes.

The judging is usually carried out by a committee of five members, who invariably return home bursting from a massive consumption of tea, as their task is always a social occasion!

We are also proud of our Best All-Rounder Competition, in which members receive points for all activities, such as attending meetings, entering shows, winning awards at shows, breeding fishes etc. In this latter connection I believe we have an original scheme. From the word "go" some years past every member to breed a fish and prove it by producing a recognisable specimen at a meeting was awarded points (10). If the occasion was the first claim in respect of that particular type of fish then an additional 20 points were awarded. Each member can claim the 10 points for each type of fish bred during each year, and most members score 10 for breeding guppies every year! The 30 point school of fry is becoming scarcer as we go along as many of the easier breeders have already been claimed.

Another of our original ideas is the Challenge Show,

which also earns points. Any member at a meeting may issue a challenge for any fish, plant or aquatic insect or snail to be produced at the next meeting. If the challenge is accepted by another member, then all members are entitled to produce an entry. This can be good fun as we have had challenges for such varied items as furnished narrow-necked bottles, the longest leaf of *Vallisneria*, the largest ramshorn snail, the frog with the longest jump etc., in addition to all the usual classes of fish. It seems probable that many organisations have similar original schemes, which might well provide the basis for some correspondence or articles in *The Aquarist*. How about it?

T. N. ARTCS,
Treasurer, Stroud and District Aquarist Society.

This Society's judging sheet for the Home Aquaria Competition, sent with Mr. Artcs' letter, shows this allocation of points: general appearance, 20; arrangement ("depth," 5; natural effect, rocks and compost, 10; natural effect, plants, 5; 20; condition of plants (colour, 5; cleanliness, 5; vigour, 5; 15; condition of fishes, 15; condition of sediment, 5; clarity of water, 5; lighting effect, 5; choice of fishes, 5.—EDITOR.

MEMBERS of the Chorley Aquarist Society noted with interest a paragraph in Mr. Raymond Yates' article in the November issue of *The Aquarist* and also a letter from Mr. Clews of Chorley in the December issue.

With regard to the paragraph in which Mr. Yates refers to the Home Aquaria Competition being run by the Merseyside A.S., I would like to suggest that the idea originated in Chorley. The Society was formed in 1953 and we held our first Home Aquaria Competition during our first year and it is still going strong. Another venture we have enjoyed for the past 2 years is an inter-club quiz and table show competition, played on the home-and-away basis, and which we would like to enter more often with nearby clubs.

In reply to Mr. Clews' letter about his unusual fighters I am afraid the answer is no. I have had the same experience with these fish on more than one occasion. May I suggest to your correspondent that in future he allows for slight variation from what the books say. The highly respected men who write these books pass on to aquarists the normal procedures for the fishes we keep but I am afraid some of our pets are just as unpredictable as we humans are at times.

Finally I would like to extend a welcome to Mr. Clews,

and any other aquarists who are in or around Chorley, on the last Monday in every month, to drop in and join our happy band of aquarists. We meet at 8 p.m. in St. George's Old Institute, Pall Mall, Chorley.

D. INCE,

Secretary, Chorley and District Aquarist and Cacti Society.

Guppies Being Over-indulged?

WHEN guppies are allocated as many classes as all other tropical fishes combined in an open show surely they are being over-indulged. During the past few years I have noticed at the shows I attended that the guppy entries were less than 10 per cent. of the total tropical entries and seldom true to type. Why give them half of the classes?

The "popular request" is an old trick: I can remember reading in a schedule that there had been an enormous request for an individual furnished class at a major show. There were five entries and I know that at least two of the entrants had made no requests (enormous—yes, three!). The fact that no other fish can come in so many different shapes and sizes, to quote Mr. Dendy, surely shows the difference between mongrel and thoroughbred, as guppy breeders have been known to admit that their different types all had the same female parent.

May I suggest that the guppy slaves play among themselves and not interfere with open fish shows.

C. R. PASLOW,

Kingston, Surrey.

I AM writing to say how pleased I was to read Mr. P. Dendy's letter (*The Aquarist*, January) about guppies being over-indulged. Although I am not very old I have been keeping fish for 7 years and have always found guppies bright and active fish in the aquarium, and very satisfactory, and I hope I shall always keep them.

R. J. JOPLING,

Earlwood, Surrey.

I WOULD like to correct your correspondent Mr. P. Dendy (*The Aquarist*, January). He refers to the Fancy Guppy Society when in actual fact it is the Fancy Guppy Association.

Our aims are simple; to spread the cult of the guppy, to bring the fancy guppy to the forefront and to try and obtain a universal standard for shows.

Anyone in the south who is interested should contact Mr. C. MacRae, 23 Aldenham Road, Radlett, Herts., and in the north, Mr. J. Allen, 19 Kingston Drive, Flixton, Manchester.

JAMES L. KELLY,

Chairman, Fancy Guppy Association.

Reproduction in Water Fleas

I WAS interested to read Mr. Somy's further letter on the above (*The Aquarist*, December), and would point out that I have based my conclusions upon the results of "observed fact," and if I have used one or two fanciful expressions it is because I am at a loss to describe in any other way what actually occurs.

My deductions from these "observed facts" may be different from what has been written previously about *Daphnia*, but I simply cannot disregard evidence which appears to me to point in a direction which is different from that commonly accepted. It is a simple matter to check my observations, and the more people who do so the better it would be. 1961, starting now, is the best time.

Mr. Somy asks me in his letter why it is that "if the development of ephippia is merely a stage in the life history . . . ephippia are not produced all the year round?"

I looked up my old diaries when I read this to make sure that I was not trusting to memory, and the months during which I recorded finding ephippia-bearing, live females are: January, February, March, April, June, August, October, November, December (all in one year). The only 3 months during which there appears no note regarding them are May, July, September. This does not prove that there were, in fact, no ephippia produced during these 3 months; I may have been otherwise occupied during those periods—it is so long since that I cannot remember. No ephippium-bearing female was the maximum size for its species.

C. E. C. COLS,

Ilford, Essex.

School Society

I AM writing on behalf of the Surbiton County Grammar School Aquarist Society, in the capacity of secretary. We now number just over 100 members, which includes at least a dozen extremely keen members. The high number is probably due to the fact that there is no subscription, but boys can donate as much as they want. We are in the process of setting up eight tanks, approximately 18 in. by 12 in. by 12 in. average size, in order to breed. To further this our Society would like to hear from any other school societies or any aquarists or societies with a view to benefiting both parties. Details of any films or slides on the hobby would be welcomed.

C. JOYCE,

74 Biffingham Road, Long Ditton, Surbiton, Surrey.

Survivor of the Feast

BEING most interested in tropical fish-keeping, but like so many others in this age of high prices, being held up by the lack of capital so essential in getting started, I have had to content myself with playing around with common goldfish, nymphs, catfish etc., plus a pair each of guppies and white cloud mountain minnows, which my dealer assured me would live in living-room temperature.

These fishes not only lived, but the guppies insisted on breeding continuously. I had three batches of young during the year, 21 young in the first, 32 in the second and 41 in the last, all in water that was freezing cold to the touch. They all survived, except the odd one or two devoured at birth by the female, until I came to the third lot. These were born on 25th October last, and what happened was that we all went away for Christmas leaving a very happy and contented lot of fishes. I came home on 26th December to find all my fishes in a terrible plight. There was a layer of white fungus on the bottom of all the tanks, all the fishes were lying on top, gasping, and the smell was horrible. I managed to save all the adult fishes except the female guppy, but lost all the young, most of which were in one tank.

I put the empty tanks outside to be cleaned and put away at a more convenient time. They were left until 5th January, when I picked up the top tank, and there, in a minute quantity of dirty water, in the corner of the tank was a tiny guppy. I quickly cleaned and filled a tank and put him in, and lo and behold, he was as lively as a cricket!

I was so amazed at this miracle that I just had to write to you about it. Nobody believes me when I tell them this little fish survived for 10 days in a spoonful of vile water. As Mr. Peter Dendy says, this must surely be, the King of tropicals!

I have since discovered that my helpful wife put a good handful of food into each tank before we went away so the fishes would not starve over Christmas (Women!)

R. W. G. COLS,

London, E.7.

New Idea for Shows

IT is a disturbing fact that over the past few years the showing of fishes has lost the enthusiastic following which it once commanded. Yet the actual hobby, having passed through a recessive period, is now enjoying a fresh wave of interest and once again a good many people are turning to fish-keeping as their hobby.

I feel sure that the reason for the decline in the showing of fishes is largely due to the past experience of exhibitors, who have suffered the common trouble of arriving at the venue for a show hoping to find tanks all ready to receive their cherished potential prize-winners, only to find that the water is still cold, or even that there is no water in the tanks. Quite often one finds that the tanks are not even in place on the staging—indeed it is not unknown for the staging not to be erected! However, it is true to say that the latter case is in fact a rare one indeed, and that generally the trouble is with the tanks themselves. So often they are dirty and leaking and one is loath to leave one's fishes in such tanks in the care of the overworked stewards.

Surely the answer would be for those in the hobby who are keen to show their fishes (and there is little doubt that this is a very fascinating side of the hobby) to have their own show tanks. In the aviculturist's world, bird fanciers have their own cages, which are generally subject to a standard specification for construction and colour. It is an accepted practice that the exhibitor supplies his own show cages and does not rely on the show promoters to supply them. Why then, cannot we aquarists do the same?

It would surely be relatively simple to devise a standard specification for the construction of a thing so simple in design as a fish tank, as it would be to establish a standard colour which is not readily subject to variation in shade (i.e. white or black as opposed to some shade of green or cream etc.).

This would mean that all the organising aquarists' society would have to concentrate on supplying for its show would be the actual staging and the heating supply, and that all-important, but all too rare commodity on these occasions, hot water. The storing of show equipment is always a headache for fish clubs and the tanks are, of course, the biggest problem. They are difficult to transport safely in numbers, and having stood unused, for a year at times, they invariably leak when they are unearthed for the annual event.

As with the show cages, so we too could have tidy carrying boxes to take the tank, and the fishes can safely be packed in a polythene bag and insulating material inside the tank. In this way a large proportion of the show tank's water may be taken to the show with the fishes still in it, and could safely be despatched by rail in this way if needs be.

To my mind this scheme has numerous advantages, as detailed above and summarised below, but I can really see no disadvantages and I am sure that there is plenty of room for further thought and criticism on my idea.

In order to give an "at a glance" analysis of the above scheme I have tabulated the points raised:

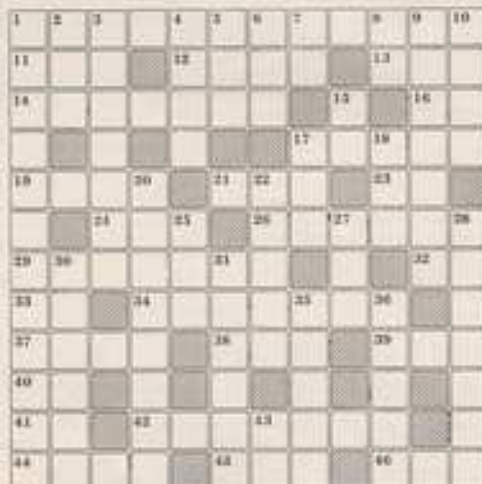
- By relieving organisers of the responsibility of providing show tanks ready to receive show entries stewards would be better able to concentrate on making ready other essential services.
- The exhibitor may be sure of his fishes being presented in a clean, non-leaking tank containing some of his own tank water.
- The considerable problem of storing show tanks by aquarist's societies would be eliminated.
- The expense of transporting bulky and accident-prone show tanks from their place of storage to the show venue would also be eliminated.

Max Gims,

The Goldfish Bowl, Oxford.

The AQUARIST Crossword

Compiled by J. LAUGHLAND



CLUES ACROSS

- Place for tinny gives fishes limits (anag.) (8, 4)
- Ruler in the East and a gash (1)
- To stir up mud in the water (4)
- A shrewy Nile would be nothing (3)
- Wheat antipode (7)
- Father in short of pay this way (2)
- Lebony rectivators (3)
- This is a way of feeding Infants to fry (4)
- Scrambled eggs are baby (see 3 Down) (3)
- Albert, the Good or Mr. Capone (2)
- Drink from the siphon? (3)
- Sand—this is a sand- flea (6)
- Shy cill for a fish (7)
- Not N.W. (1, 1)
- Excision (2)
- May be pyruvic acid will finish the job (7)
- Mixed fare (4)
- Colour of one kind of sword-tail (3)
- Fish in this water would not be light (3)
- This is that is (1, 1)
- Swamp ship (1, 1)
- Iterative with shell with stonem radiations (7)
- A necessary for tropical aquaria (4)
- Angeles (3)
- Seed (3)

CLUES DOWN

- Fish with a heavenly body? (5, 4)
- The "IT" (1)
- Are its fry called kittens? (7)
- Id (4)
- See 23 Across (3)
- This bladder is necessary for fishes (3)
- Law (2)
- It's in (2)
- Small projections with reflex (7)
- Kill (4)
- "It—, Beate" (2)
- Little George (3)
- Soft food for infants (3)
- Strip you may cover that cooked fish (5, 5)
- Kind of Wessling hemp (5)
- A fish remains when position leaves plenty (3)
- Floating leaf of aquatic plant (3)
- Species of thrush (3, 4)
- Used as bait for fish or mice (4)
- Clothed as with a mask (4)
- Goldfish or false gods (3)
- Run away with a lover (3)
- Take a little look (3)

(Solution on page 241)

Fertilisation of the Swordtail Characin

by R. E. MACDONALD

SPAWNING the swordtail characin (*Corynopoma rissii*) is an easy and most interesting process. Members of this particular species of the family Characidae are cheap and readily obtained from dealers, and as so few difficulties are presented when breeding, it is a wonderful fish for arousing interest and confidence in the novice.

The swordtail characin grows to about 3 inches and breeds at 2 inches, by which time the male fish can be identified by the club-like extension to his operculum (gill cover). When I was a novice (with a somewhat depraved mind), I thought that this appendage was used solely for battering females into submission or for use when assaulting other fishes! This is not true, for in fact I found that the swordtail characin is a most peaceful species and makes a delightful addition to the community tank.

Breeding should be allowed to take place in quite a large tank, one of at least 15 gallons capacity (24 in. by 12 in. by 12 in.), as these fish are extremely prolific in their spawnings. They produce around 300 to 400 fry at each spawning when fully grown.

The breeding tank should contain soft water with a pH 6.8, i.e. slightly acid. The temperature of the water, normally most suitable at 75° F, can be increased to 82° F as a breeding optimum. The tank should contain plenty of dense vegetation in which the female can lay her eggs and which will also provide seclusion for the fry when newly hatched.

A suitably matured pair of swordtail characins can be introduced to the tank and conditioned by feeding with a diet consisting of a good dried food well varied with plenty of live foods.

Before long, the fish will become extremely active with the male fairly prancing around the female and showing-off in general. As the male's agitation increases, the club-like extension (known as the "corynopoma") on the operculum will become enlarged and stand out at right angles, in contrast to its normal position at the side of the body. The male will then effect copulation with the female by curving his body and directing sperm at the ventral opening of the female.

The eggs of the female are discharged from the ovaries at spawning time but remain in the oviduct until they are fertilised by the male spermatozoa, after which they are expelled from the body of the female and deposited by her on the vegetation etc., where they remain until they hatch.

Eggs of the female swordtail characin are dermal eggs, i.e. (i) they are adhesive and possess sticky membranes or threads by which they are attached to various surfaces in the breeding tank (this sticky secretion is apparently not soluble in the water); (ii) the eggs are found to possess a specific gravity a little greater than that of water, which means that if any of the eggs become detached from their surroundings they will immediately sink to the bottom of the tank.

The spermatozoa produced by the testes of the male swordtail characin are formed into compact balls in the



Swordtail characin (*Corynopoma rissii*)

sperm vesicles and are then known as spermatophores. In these spermatophores the tightly packed spermatozoa are held together by some form of gelatine or matrix which is unaffected by contact with water, but which dissolves after entry into the ovary-uterus of the female, and releases the spermatozoa. These spermatophores can be examined microscopically if taken with a pipette immediately after copulation from the ventral opening of the female.

Although the male fish makes many "attacks" on the female by curving his body and firing spermatophores "cannon-fashion" at her ventral opening as he passes, very few direct hits are necessary as each spermatophore is found to consist of many thousands of spermatozoa.

In some circles it is thought that the corynopoma assists the aim of the male when firing spermatophores. From experiment I have found that the corynopoma is sensitive to touch, which could possibly indicate that it helps the male with his aim if it is used as a "feeler." There is also the possibility that nerve fibres in these structures could be instrumental in triggering-off the release of the spermatophores.

When the male swordtail characin has temporarily expended himself, the female will retire alone to the vegetation, where she will deposit the eggs that have, by this time, been fertilised.

The action of the female in entering the vegetation and depositing her eggs unaccompanied by the male has led some aquarists to believe that the male spermatozoa are released into the surrounding water, where they are gathered in the mouth of the female. The female is then thought to fertilise the eggs herself with the captured sperm. The internal fertilisation process of the female swordtail characin can be ascertained by a biological examination.

The fry appear to be quite hardy and can be fed immediately on Infusoria. It should be remembered, when the young are hatched, and possibly before this stage, that the parents will require to be kept from committing infanticide. This particular characin species can be hand-stripped of their eggs and sperm; but whatever the method used when breeding the swordtail characin, the results will most certainly please.



from AQUARISTS' SOCIETIES

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

THE subject matter for the **Brockley and District Breeders Circle** (Aquaria Society) meetings in March are: 7th—Pond maintenance and accounts; 14th—Breeders' Class Table-show no. 1 (1961); 20th—Exhibition of members' home-made equipment etc.

The group is at present discussing a permanent exhibition stand to illustrate aspects of the hobby for beginners, subject matter to run from various species of fish to the construction of a large fish house. It is hoped to exhibit the stand in support of the group's new policy of offering an associate membership to beginners in the hobby, in other words to people who want to learn how to keep fish in good condition without entering into the competitive world of the "organised" side of society life.

PAKISTAN INTERNATIONAL AQUARIUM EXHIBITION—1960

THE first International Aquarist Exhibition was held under the auspices of the **Pakistan A.S. (PAAS)** in Karachi last November. Exhibitors from overseas added to the beauty of the show. Local exhibitors were responsible for an aggregate of 300 entries in the various classes and sections. All the exhibits were judged by Dr. A. R. Hamid, Mr. E. L. Sullivan, Dr. Harold P. George and Mr. C. E. Pifer.

Mr. Zakir Hussain, Minister for the Interior, Government of Pakistan, distributed the prizes to the winners.

Foreign exhibitors were represented by members of the International Federation of Aquarist Societies, New Jersey; the Federation of Guppy Breeders' Societies, England (and its section in the Hague, Holland); the Deutsche Guppy Gesellschaft, Berlin (D.G.G.), the Verband Divanacher Veredlicher Aquaristen, Germany (V.D.A.), Toronto Aquarist Society, Canada, Canadian Association of Aquarist Clubs, Canada.

THE newly elected officers at the last meeting of the **Bath A.S.** were as follows: Chairman: Ph. L. Bowater; Secretary: Mr. J. Stevens; Treasurer: Mr. E. Challenger.

THE annual meeting of the **Postypool and District Pondkeepers and Aquarist Society** was held recently and although the meeting was not so well attended, it was very lively and enthusiastic in its outlook.

There was a very determined debate which covered increasing the membership, and it was felt that as the district had been extended greatly during the last few years by the building of the nearby Conitran New Town, there was scope for greater activity and interest. The Society would welcome anyone interested and the address of the secretary is: Mr. F. J. Jephson, 7, South Road, Oakfield Park, Desmores, Meen.

The election of officers resulted as follows: President: Col. H. L. Hughes; vice-presidents: Col. H. Brown, Messrs. H. J. Pugh, D. Gregory, J. Martin, Mrs. Graham; Chairman: Mr. J. Oliver; vice-chairman: Mr. Bamford; secretary: Mr. F. J. Jephson; treasurer: Mr. J. Martin; show secretary: Mr. B. Webster; publicity officer: Mr. F. Jefferson. A vote of thanks was unanimously passed to Mr. D. R.

Bowers for his valuable work during the past five years in the office of secretary.

RECENTLY the **Southend, Leigh and District A.S.** held its election of officers for 1961. The result was: President: Mr. S. Halsey; vice-president: Mr. G. Pryor; secretary: Mr. G. Hodger, 67, South Avenue, Southend-on-Sea; Treasurer: Mr. B. Westlake; publicity secretary: Ms. C. Harrison; committee members: Messrs. R. Poole and P. Woods.

At the first meeting in January there was a slide show entitled "Meet the Members" which was well received. Meetings are held in the I-beam Hall, Clarence Road, Southend, on the first and third Tuesdays in the month, commencing at 8 p.m. and visitors are always welcome. A good programme of table shows and illustrated lectures has been arranged for the year.

THE officers elected at the **Walthamstow and District A.S.** were as follows: Chairman: Mr. C. G. Parmenter; secretary: Mrs. R. Parmenter, 121, Hamilton Avenue, Barkingside, Essex; Treasurer: Mr. D. H. Goldsworthy, 64, Nelson Road, South Chingford, London, E.A. Show secretary: Mr. W. Parry, 35, Brown Road, Walthamstow, E.17. Membership of the society continues to increase, and a highly successful year in outside show furnished aquaria classes ended with the club being

awarded the Hackney Challenge Shield for the second year in succession.

THE last two meetings of the **Reading and District A.S.** have been table shows. The winners were as follows: Breeders' Cup: 1, Mr. S. Humphreys (A. australis); 2, Mr. O. Thompson (2nd place); 3, Mr. E. Pitts (miscellaneous fish). Winner of the Cichlid Cup was Mr. E. Pitts (blue acara), the second being Mr. C. Locke (blue acara). Mr. E. Pitts (white cichlid) was third. An interesting talk was given by Mrs. J. Watts as a tape recording. The subject was breeding. A concert has been arranged between the Three Counties and the South Midlands Group and this will be held at Oxford at the end of March. A Federation of Guppy Breeders' section has been formed by the Three Counties group at Reading. An inter-club league has been formed by the Three Counties, and the Oxford club has presented a trophy for annual competition. This year's Three Counties Open Show will be held at Basingstoke at St. Mary's Hall in August, and will be organized by the Basingstoke Club. More details regarding this show will be available later. The Reading Society meet at the Baginbun Arms on the first and third Monday of the month at 7.30 p.m. and new members can be assured of a warm welcome.

BLACKPOOL Tower Company has appointed Mr. Albert Burren as curator of the zoo and aquarium. Mr. Burren succeeds Mr. R. E. Legg, who left Blackpool at the end of the year to become Superintendent of Chester Zoo.

He has been employed by the company for over 25 years and has been deputy to Mr. Legg since 1952. Mr. George Burren, who was appointed deputy curator of the Tower Aquarium in 1952, has been appointed Mr. Burren's deputy.

He joined the aquarium staff in 1947.

MR. G. HARPER, of the **Bristol A.S.**, has been elected president for the fourth consecutive year. Other officers elected at the annual meeting were: vice-president: Mr. S. J. Davies; hon. secretary: Mr. W. Ham; hon. treasurer: Mr. H. Lennox.

REGARDLESS of the cold evening many members brought their tropical fish for the table show for "Charities" at the meeting of **Hounslow and District A.S.** The winner was Mr. Roberts, 85 points. Mr. Cole, Mr. Pratt and Mr. Bird tied for second place with 81 points. Misses Woodwood, Patrick, Pratt and Cole tied for third place with 79 points. The judge was Mr. R. Luff. The remainder of the evening was given over to a discussion on general fish-keeping.

A SUCCESSFUL and enjoyable development in the activities of the **Macclesfield A.S.** was the first annual dinner.

Among the company was the president, Mr. H. Stannay. Several people from out of Macclesfield were unable to attend owing to the fog.

After dinner, there were entertainment and dancing, with Mr. H. S. Lee as M.C. Arrangements for the banquet were made by the secretary, Mr. H. Jones.

TWO changes in administration have been announced by the **Willowden and District A.C.** and are as follows: Secretary, Mr. D. G. J. Walker, 77, Oakington Manor Drive, Wembley, Middlesex; Telephone Wembley 4274. Show secretary, Mr. J. R. Burton, 24, St. John's Avenue, Harlesden, London, N.W.10.

THE **Canford Aquarists' Society** Open Show will be held on Saturday 27th May. Donching will be on Friday the 26th. Judging will be by leading F.R.A.S. judges and several trophies including the Isles Cup, the Evans Cup and Kingfisher Trophy will be up for competition.

This show is the largest in the South of England and attracts over 700 entries. Full



The Aquarist's Badge

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

To obtain your badge send a postal order for £s. 6d. to *The Aquarist*, The Burn, Hall Ave., Boreford, Middlesbrough, and please specify which type of fitting you require.

details can be had from Mr. S. Carnock, 33, Howard Road, Bromley, Kent.

RESULTS of the table shows held recently by the **Goode and District A.S.** are as follows: **Anabantid:** 1, J. N. Banks, dwarf gourami; 2, P. Densby, least gourami; 3, R. Hosi, blue three spot gourami; **Homo Reef Fish:** 1, F. Densby, red goby; 2, J. N. Banks, red woodhull; 3, K. Coakley, stickleback; **A.O.V.:** 1, P. Densby, Jordanella beridie; 2, F. Marshall, marbled loach; 3, K. Coakley, red finned shark. The society also put on an exhibit at a show held by the local Chrysothamnium society and one at the Cage Birds society's show.

The Annual General Meeting of the **Bradford and District A.S.** was held in January and in his annual report, the president, Mr. C. R. Wilson, expressed his appreciation of the work done by all members throughout the year. He also paid tribute to all who had helped in any way in achieving such wonderful results at the 1960 B.A. Year Festival. The secretary, Mr. R. Marshall, said in his report that membership had been sustained throughout the year and the results were results to be proud of. The monthly table show between members of the Society had increased beyond all expectations. In conclusion, the secretary remarked on the spirit running through the Society which every member should be proud of and strive to uphold.

At a recent meeting of **Northampton and District A.S.**, members were shown 100 colour slides of tropical fish. They featured the spawning of the blue acan and the Siamese fighting fish, and were loaned to the Society by the Bedford and District A.S.

At the last meeting of the **Ilford and District Aquarists' and Pondkeepers' Society** members divided into three groups for discussion on livebearers, egglayers and ponds and cold-water fish, and the evening proved to be a very successful one.

The Table Show was for any variety livebearer, and any variety egglayer, and the winners were: Egglayers: 1, Mr. Cook—3 spot gourami; 2, Mr. Berger—goldfish; 3, Mr. Hartley—carr. barb; Livebearers: 1, Mr. Barbering—black mollie; 2, Mr. Stubbings—yellow waptail goby; 3, Mr. Hartley—Berlin sword. The prize for the highest number of points gained in table shows throughout the year was won by Mr. A. L. Stubbings. Anyone interested in fish-keeping will be welcome and further information may be obtained from the secretary, Mr. V. Price, 1A, Horace Road, Barkingide, Essex.

At the January meeting of the **Cambridge and District A.S.** members were entertained by a German member, Mr. Simon-Detrich, with a selection of his own films. The total of eight films shown included the breeding of *Trichogaster trichopterus* amongst those taken of home aquaria, whilst films taken during a visit to East Africa provided contrast with films of London Zoo and of Wimbledon, and widened the view from the rather limited confines of the home aquaria.

The programme of the **Slough Aquarium Society** for March includes the award of Eric Kitching Memorial Trophy, for any single fish, which is scheduled for the 6th of that month.

Meetings are held on the first and third Mondays of each month at Slough Community Centre, where, on the 5th and 19th of May, the Annual Open Show is to be held.

NEARLY forty members attended the January meeting of the **Corby and District A.S.** This took the form of a social evening at which members of Northampton Society showed colour slides of their members' tanks.

Recently the first Home Furnished Aquaria Competition was decided and the first three

winners proved to be comparative newcomers to the hobby. The results were: 1, Mr. Eric Green; 2, Mr. Graham Roddis; 3, Mr. Arthur Burnon.

Meetings are held on the first Wednesday of each month in the Lounge at the Nags Head Hotel, Corby at 7.30 p.m. and new members will be most welcome.

TWO notable events took place at the venue of the **Independent Aquarists' Society**, to end a very good year. Firstly the chairman, Mr. P. Tomkins was presented with a chair of office, and he has held this office for five years. The badge of office is called "The Order of The Dolphin," and this occasion was also marked with a challenge match against the **Chapman Aquarists' Society**. Mr. Tomkins took first prize in all the four classes, as well as the best fish in the show. **Independent** won the match 27 points to 13 points. The evening concluded with a film show given by the Society's "Film Unit." Councillor G. A. Barnard, of the Ilkington Borough Council, presented the Chair of Office and also the awards for the winning fish entries.

The second event was the Christmas Social, with a film show, dancing, raffle and games, and a show of coloring from one of the Society's members. The evening was also marked by the presentation of the "Home Aquaria" competition trophy to a new member to the Society, Mr. E. Abbott, second being Mr. J. Howard and third Mr. D. Mason. The second and third winners were presented with small plaques.

The **Independent Aquarists' Society**, will resume their activities on Monday 9th January 1961, at their venue of Room 13, Ilkington Mens' Evening Institution, Moorans, Bedford, Upper Hersey Road, Holloway, London, N.7.

At the last meeting of the **Middlesbrough and District A.S.** the main event was an Open Table Show and the following awards were made: 1, female guppy, Mr. S. Westwood; 2, anemone cutfish, Mr. S. Westwood; 3, paradise fish, Mr. H. Whittam; 4, cherry barb, Mr. E. Toverton; 5, *Betonia* goby, Mr. S. Whittam; 6, *Jessie*, Mr. B. Clark. A full season of inter-city table shows, and table shows, have recordings and films is being looked forward to by all members. The secretary is now Mr. L. Collins, 21, Grosvenor Avenue, Norton, Stockton-on-Tees, Co. Durham, and the annual year show will be held on 6, 7, 8 April at the All Saints Hall, Middlesbrough. Entry forms are now available from the show secretary, Mr. E. Whittam, 18, Devonshire Road, Middlesbrough.

The annual general meeting of the **Walsall Aquarists and Pond Society** was held recently. In his address the president, Mr. S. Mills-Clarke, stated that 1960 had been an excellent year for the society. All aspects of the hobby had been covered in a variety of lectures, and on the social side there had been an outing to Regent's Park Zoo, a film show and the annual dinner. The highlight of the evening came when the president awarded the Richards cup to the "Member of the Year," Mr. V. Whiting.

Officers re-elected for 1961 were as follows: Chairman, Mr. R. Marshall; vice-chairman, Mr. H. E. Sumner; past chairman, Mr. W. L. Mansfield; treasurer, Mrs. M. Huxley; secretary, Mrs. E. Lambson; show organizer, Mr. B. W. J. Coombs.

The **Coventry Pool and Aquarium Society** trophies for 1960 were presented by the president, Mr. P. O. Smith, at the annual meeting.

Mr. B. Hatt received the **Coventry Cup** for the best aggregate of points at table shows for tropical fish; Mr. F. C. Randall won the **Smith Jones Cup** for coldwater fish and the **Coventry Cup** for the highest aggregate in both sections. The **Garden Pool** plaque went to Mr. J. H. Stearns, and the **Court Plaque** for home aquaria to Mr. F. Prescott.

The following officers were elected: President, Mr. P. O. Smith; chairman, Mr. G. Glover;

vice-chairman, Mr. F. Prescott; secretary, Mr. V. Workman; treasurer, Mr. H. Court; news letter editor, Mr. F. C. Randall.

The headquarters of the **Uxbridge and District A.S.** is now at the Chilton View Hotel, Chilton View Road, Cowley, Middlesex. Meetings are held on alternate Wednesdays, commencing at 8 p.m. This move has resulted in better accommodation and a more congenial atmosphere.

Recent activities of the society have included a film show which featured a film of the National Aquarium, Bombay, and the breeding habits of *Gambusia*. Prospective members are invited to contact the secretary, Mr. C. E. Bull, 70, Hatherleigh Road, Rusley, Middlesex.

The Parks and Communities Committee have given the **Southport A.S.** permission to place a 4-foot tropical fish tank in the Botanic Gardens Café.

In addition a contribution of £10 is to be made to the society by the committee towards the cost of the necessary fish and equipment.

The **Massfield and District A.S.** held its fourth annual dinner recently.

The chairman (Mr. A. J. Blake) welcomed the guests, Mr. and Mrs. S. Pepper, and Mr. Pepper presented the Society's trophy award for the highest number of points gained in table shows of tropical fish held during the previous year, to Mr. B. Hutchinson (Kinky). Mr. Pepper congratulated Mr. Hutchinson on his fine effort.

Table show slides were presented to Mrs. N. Blake (Massfield Woodhouse) and Mr. H. Martin (Sumo).

NEW SOCIETY

A NEW society has been formed in the Lewisham area and is to be known as the **Freeland Aquarist Society**. Prospective new members can obtain full details of the club's activities from the secretary, Mr. R. A. Thaman, 54, Beccraft Road, London, S.E.4.

SECRETARY CHANGES

CHANGES of secretaries and addresses have been reported from the following societies: **Bath A.S.** (J. Stevens, 3, Northok Buildings, Bath); **Barnley A.S.** (L. Lewis, 85, Rectory Road, Barnley); **Ponywood and District Pondkeepers and A.S.** (F. J. Iphigene, 7, South Road, Dukfield Park, Co. Down, Mon.); **Southport, Lough and District A.S.** (G. Hodger, 87, South Avenue, Southend-on-Sea); **Walsley and District A.S.** (D. G. J. Walker, 71, Dakington Manor Drive, Wembley, Middx.).

Crossword Solution

P	E	C	T	O	R	A	L	F	I	N	S
A	C	A	R	O	I	L	N	I	L		
R	O	T	I	F	E	R	T	P	A		
A	F	F	E	G	U	P	P				
D	R	I	P	O	R	E	A	L			
I	S	I	P	H	O	P	P	E	R		
S	C	H	E	L	L	A	S	E			
E	H	C	Y	A	N	I	D	E	D		
F	E	A	R	R	E	D	L	O			
I	E	U	V	O	O	I					
S	S	C	A	L	L	O	P	N			
H	E	A	T	L	O	S	E	C	G		



It's Wardley Time! All the Time!

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