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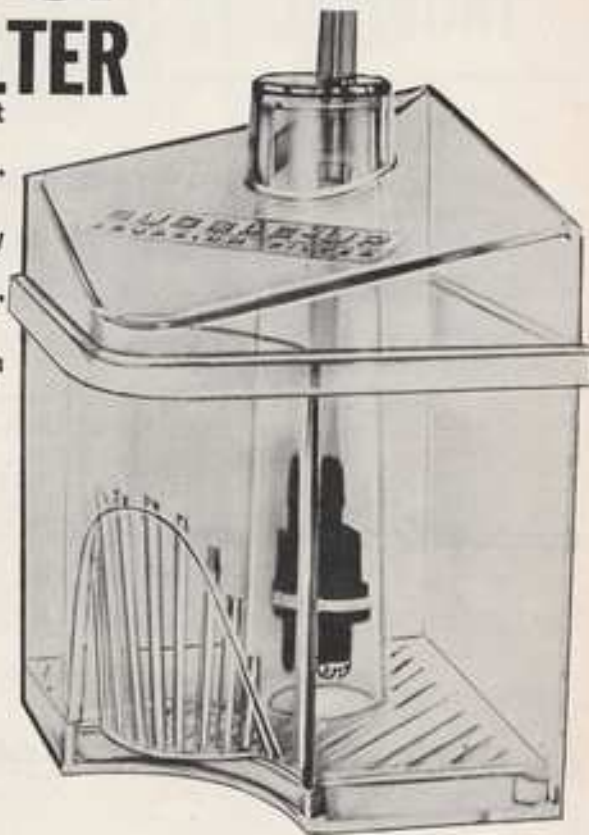
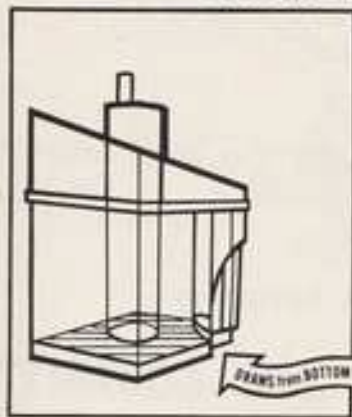
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Belle Vue alligators

FOR the third year in succession the American alligators in the Reptilium at Belle Vue Zoo have mated, built a nest and the female laid eggs. Although no young have been seen, there is ample proof that on this occasion, at least, two of the eggs were fertile and hatched out. A number of broken and empty shells were found on the surface of the closely guarded nest pile. Most contained matter that had become so putrid that it was impossible to tell whether they had ever been fertile but two of the shells which were opened at the extremity, appeared to have been broken from within and were perfectly clean and completely devoid of odour. It would have been virtually impossible for them to have remained in this state while the others putrefied unless they had contained life.

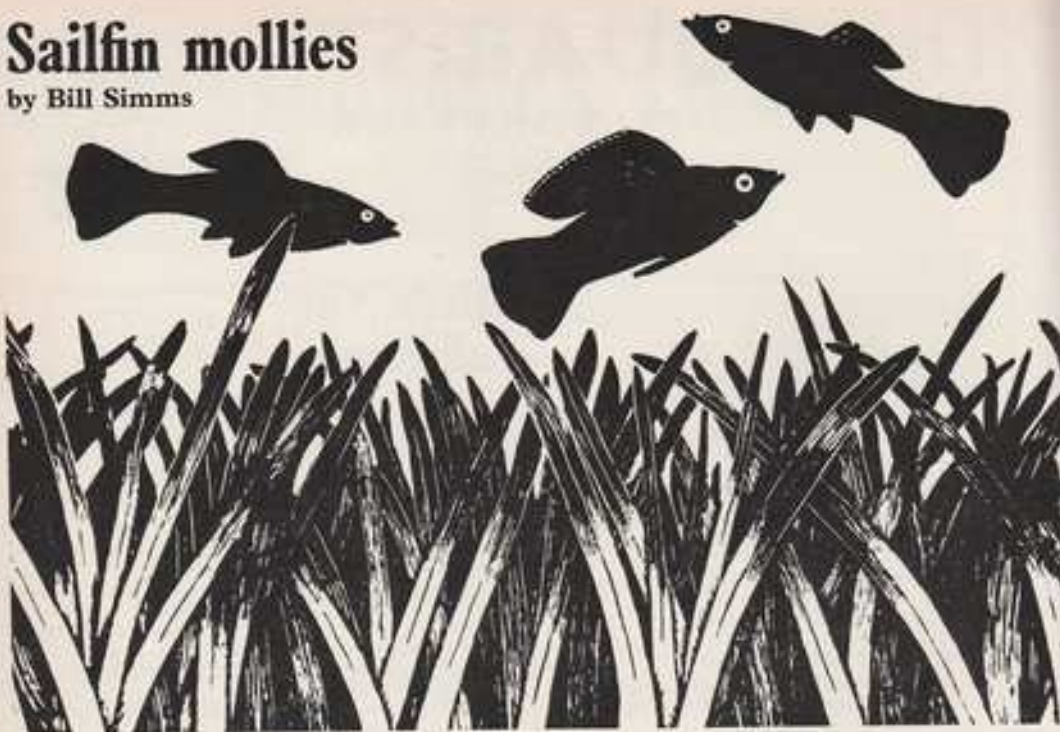
The nesting site chosen by the female made segregation difficult without disrupting the public viewing facilities and it was hoped that any newly hatched young could be moved to safety in good time but it is apparent that they were taken by the male, which last year was seen to devour a large number of the eggs, before the female could bury them.

The reptiles obviously appreciate the environment provided for them and efforts will continue to bring about a successful rearing.

If the alligators have failed again, other of the zoo's inhabitants have been more successful and it is always gratifying when zoo babies arrive within a short period of time instead of being spread throughout the year. Since the middle of July baby wallabies, both Bennet's and Darnas, have been seen popping in and out of their mother's pouches. Nearby, the Caracal lynxes have been proudly guarding a pair of playful cubs. In the Monkey House the first arrival was born to one of the aristocrats of the monkey kingdom, the lion-tailed Macaque, and other babies are expected in the Monkey House before long. In the Paddock Range a Sikka deer fawn and a fine stumpy oryx calf were born within a few days of each other. In the Children's Zoo one of the most attractive of all zoo babies was born to the Alpacas. Both mother and father are deep chestnut in colour but the baby is jet black and looks for all the world as if it were made out of pipe cleaners. In the Great Ape House the third chimpanzee to be born in the zoo arrived recently and may be seen clinging tightly to its proud mother--altogether a very pleasing collection of youngsters to be exhibited all at one time.

Sailfin mollies

by Bill Simms



WHEN you are offered a mollie can you tell which kind it is—regardless of the name given to it by the dealer? Perhaps not. There are now many kinds, and some of them are man-made—hybrids of various sorts.

However, if one is confronted with a sailfin type of mollie, black, it is fairly safe to say that it is either a *Mollienesia latipinna*, or a *M. velifera*, if a pure-bred fish; or a cross between these two if it is a hybrid.

The male of *M. latipinna*, shown in the drawing, has a dorsal fin starting well back from the head and well behind the line of the gill-plate edge. It can have a gloriously full sailfin, or a rather small one, for it is a most variable fish in both colouring and finnage. In the wild state it is found in Florida and the southern edge of Texas; always near the coast, and sometimes in salt water.

The best kinds of *M. latipinna* are found in these salt or brackish waters and among them are melanistic (black) sports. It is from these that the pure black strain was developed. But it was sometimes of rather poor fin size.

M. velifera, a native of Yucatan, is larger than *M. latipinna*, and its large sailfin starts considerably farther forward on the head and is usually level with the gill-plate. It also has a wild black form and this was originally the only black sailfin mollie.

In addition there are two more sailfin mollies to be found wild in Central America. They are *M. petenensis*, which is only found in Lake Peten in Guatemala; and *M. formosa*, found in the coastal area below Mexico. In other words, between the areas of *M. latipinna* and *M. iphopsi*, a small dorsal fin variety. It is now considered that *M. formosa* is a naturally formed hybrid between these two mollies.

M. petenensis was at one time called the spike-tailed mollie because the lower rays of its tail were dark—like the developing sword of a male swordtail. However, this peculiarity only appears on the male and otherwise the fish is very much like *M. latipinna*.

So we are left with two main sailfin mollies, and from these have been bred and developed most of the aquarium sailfin mollies. My preference is for *M. latipinna*, either black or in its natural iridescent colouring. It is smaller than the best of the *M. velifera* varieties but has a character in the aquarium that I like better. Perhaps I like it best because it always bred easily for me.

Breeding black sailfin mollies is fairly simple for being large live-bearers there is little trouble about food for the youngsters. Newly hatched brine shrimps are ideal as well as a little chopped-up spinach. However, the female has a large mouth and though mainly vegetarian, she

Awards at the "Champion of Champions" Contest

Below are the awards which are being presented at the British Aquarists' Festival, Manchester, on 28th & 29th October, 1967, to the winners of the "Champion of Champions" contest.



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The plaques will be inscribed with the name of the recipient and the position gained in the contest.

The entries for this contest represent the finest display of fish in the Country and are all winners of the "Best Fish in the Show" award at open shows which have been held throughout the country. Every entrant has received a gold-plated lapel pin as illustrated.



A male species of a
Molliesis latipinna

appears to enjoy a meal of baby mollies. Being black they are easy to spot and probably attract her attention.

I grow a tankful of *S. nana*, with the water restricted to a depth of about four inches while the plants are growing. They will grow no longer than the water depth. Then, when the mollie is decidedly gravid, I raise the water level another four to six inches and put her in. This is less upsetting to the expectant mother than the more conventional trap and it does the job very well for the babies soon learn how to dodge into the dense bottom growth.

A tank of low-growing *S. nana* such as this can be used most successfully for keeping and breeding a trio of mollies (or other live-bearers). With mollies I find that they thrive better when there are many red *planorbis* snails in with them. Why, I do not know. Probably it has something to do with the degree of alkalinity caused by the snails. The drawing gives an impression of the pleasant appearance of such a tank, with the dense green foliage completely covering the bottom.

When it is started off in this way I find that *S. nana* will rarely try to grow longer though when the plants are transplanted to another tank with deeper water they will go away fast. It is a method of clothing a tank that has the merit of providing ideal conditions in the water, and also it gives both babies and eggs a very good concealment.

The coral fishes of Belle Vue

by T. Ravensdale □ Photographs by Nancy Cowen

THE Belle Vue Zoological Gardens has probably the finest collection of coral fishes in the country and a trip to Manchester would be well worth the effort for any saltwater fish enthusiast. The story behind the scenes, however, is just as interesting.

It all started just over five years ago when Mr. R. E. Legge, who was in charge of the Blackpool Tower Aquarium for more than 18 years, was appointed superintendent at Belle Vue. Mr. Legge's main interest was zoological design and setting and so he immediately began the re-design of Belle Vue. Not satisfied with just minor improvements Mr. Legge, with complete disregard for normal working hours or rest days, began by completely rebuilding the Ape house and designing a new revolutionary one. He then scrapped the great cat house and built open enclosures for all the inmates. In Easter 1964 the aquarium and reptilian was attacked, stripped and rebuilt. The results of Mr. Legge's work is one of the best aquariums I have seen anywhere. All forms of fish and reptiles are housed there and numerous clever ideas help to make a modern and healthy atmosphere for both fish and visitors.

Of great interest is the alligator room designed a new way with underfloor heated pool and constantly moving water and a hot waterfall thrown in. The pool can be crossed by a bridge and an enormous banana tree—complete with bananas during season—finishes off the décor. This new form of heating has resulted in the remarkable fact that a pair of American alligators have decided to mate, the results of which were several sets of eggs. *This is the first aquarium in the world to achieve this feat!* Unfortunately, no live results have been experienced yet although at least two eggs were suspected to be fertile recently—the male probably treated them as his breakfast.

There are some 56 tanks in the aquarium ranging in size from 40 gallons to 1,200 gallons and 11 of these are tropical marines. This figure is to be increased this winter. The most interesting feature of the new aquarium is that no outside contractors were used and all work was conducted by the Belle Vue staff. Mr. Legge played a great part in this and personally designed and constructed every tank in the building. Each tank has its own type and layout of rockwork and all these cleverly selected rocks were actually collected by Mr. Legge personally. Trips of up to 200 miles were made in search of particular rocks and the great care and thought which has gone into these rocks can be seen in the personal tank décor in each case.

Each tank is double glazed to prevent scratching of the main glass and disturbance to the fish by "tank tapping." Each tank is individually filtered on the Garmaud principle and the volume of water actual is more than twice that viewed by the public. The result is continuous water changes and healthy fish.

For the first 18 months a certain amount of trouble was experienced in the delicate coral fish tanks but as the toxic properties of the new tanks wore off these troubles ceased and have not been experienced since. In fact, many of the original coral fishes are still to be seen. The most



Above Mr. Legge (right) and the author

Left Mr. Legge with the alligators

Below The bat fish

notable of these "first specimens" are the enormous Bat fish which local enthusiasts regularly check on for size. They are now at least 12 in. across and as healthy as ever. Another interesting pair of original fish are two *Dascyllus* which, for the past 12 months have been spawning! A 2 ft. dip tube placed into the tank to point out the eggs for the photographers was violently attacked by the 3 in. female guarding the eggs.

Water in the Belle Vue aquarium is brought from Blackpool and strengthened (it has a density of only 1.020)





Above Part of the reptile section

Right Mr Legge under the banana tree with alligators

Below The spawning *Dascylus* attacks a 2 foot tube!



with Tropicmarin by Mr. Taylor, who is in charge of the aquarium. New arrivals are quarantined in pure tropicmarin and watched carefully by Mr. Taylor, who is the equal of Mr. Legge regarding enthusiasm and hard work.

An interesting fact about the water used in Mr. Legge's last aquarium at Blackpool is that all public sanitary systems in the town are operated by sea water, street washing, etc., and as new water is required for marine aquariums it can be obtained quite simply from any nearby tap!

The Belle Vue aquarium works very closely with local

Photo by T. Arvendale



societies and is always willing to help the private enthusiast. A final inducement to visit Belle Vue is the extremely interesting zoo shop. They have in stock a fabulous collection of coral, rockwork, shell and other tank decoration. These are very carefully chosen and cleaned and are reasonably priced.

As one leaves the Aquarium and Reptilian a final glance at the exterior will reward the viewer with a beautiful sculpture in iron of a large fish. Who made it? Mr. Legge, of course.

Now that you have purchased this issue, and we hope are enjoying its news and views, be sure to order our next. Don't delay, order right-away our November issue of Aquarist

BUMPER
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NUMBER

What is your opinion? No. V

by B. Whiteside

ALTHOUGH the response to the second article in this series was rather poor in that only very few letters were received, the third article has produced a bigger response to, at least, one of the two questions posed. The questions posed concerned the raising of brine shrimp as one of the first foods for baby fishes and conditions under which *Cryptocoryne* plants thrive.

Fifteen years old **Alan Newman** of Croydon has a simple method of hatching brine shrimp for the aquarist who does not need very large numbers of shrimps. He uses a 10 in. by 5 in. by 2½ in. deep plastic container which holds 3 pints of water and costs 3s. at our largest chain stores. Alan puts 2 pints of water and 2 level tablespoons of both sea salt or cooking salt into the container. After adding the eggs, he places the container on top of one of his 14 in. by 8 in. by 8 in. tanks which has its cover glasses out so that a space is left for the hatching unit. Heat is received from the warm water and heat and light from the light bulb lying on the glass next to it. The eggs hatch in 24 hours and the shrimps congregate near the bulb, where they are siphoned out.

From Great Bardfield in Essex, 16 years old **Jeremy Kenyon** writes on the subject of *Cryptocorynes*. In his tanks, Jeremy has two species of *Cryptocoryne* flourishing together with other plants which include Amazon swords of about 18 in. in height, dwarf lilies, banana plants, Aponogetons and dwarf chain weeds. Of all the plants, the *Cryptocorynes* are flourishing best, and Jeremy had to sell many of them in order to prevent their total takeover. The species of *Cryptocoryne* which Jeremy grows are *C. affinis* (*Haerthiana*) and *C. nevilli* (dwarf form). They are growing best in a 36 in. by 15 in. by 12 in. tank which gets a fair amount of diffused light during the day and roughly one hour of rather weak sunlight late in the afternoon. The tank is also lighted for about twelve hours each day with two 40 watt bulbs. Compost consists of about 2 in. of aquarium gravel with a stocking filled with peat and about one teaspoonful of bonemeal, to reduce the excessive acidity of the peat. Water is seldom changed as the *Cryptos* always fare badly after the introduction of fresh water, but the water keeps very pure. Spontaneous spawnings of neons, angels, silver-tipped tetras, thick-lipped gouramis and zebrafish have occurred in the tank. From time to time Jeremy adds one or two tablets of vitamin B complex which he finds most beneficial to the fish, plants and snails in the tank. He believes the water to be soft and acid although he never tests it. Jeremy ends by saying that he was very proud to have one of his *C. affinis* flower at Easter, with a very tall purple flower above the water. (The use of the vitamin B complex tablets and the stocking I find most interesting!)

Hugh Spence, aged 18, of Kilmarnock, Ayrshire, has tried several methods of raising brine shrimp. He has floated a jam-jar of salt water in the tank and fed the shrimps to his fish immediately they hatched. Hugh

repeated the above method and tried to feed the shrimps upon green sea water. This did not work because, Hugh thinks, the shrimps and the algae could not stand the difference of temperature as the water containing the algae had been cold. Hugh has also used a system adapted from that devised by his friend, Norman Paterson. Eggs are hatched in containers upon a window-sill where they get light and some measure of heat. After hatching, the shrimps are placed in a tank of green sea water. Here they grow up and can be used to feed fish up to about 1 ft. in length. Hugh also hatched shrimps in a tray of salt water floating in a tropical aquarium. On the question of *Cryptocorynes*, Hugh said that he had grown these for many years and that the only time that they died down was when he was given some pigmy chain swords. Growth only began again when the *Cryptos* were moved to a sword plant-free tank, where they now thrive with other species of *Cryptocoryne*, Indian fern and *Vallisneria*. Hugh has found that his plants grow best in water of pH 7.3 and 7 DH.

Miss Susan Lax of North Shields, grows *C. affinis* and *C. beckettii* in a 3 ft. tank which receives 120 watts of light for 8 hours daily. The water is not soft and has a pH 7.1. Peat and fine sand cover the base of the tank. Miss Lax's plants grow so well that she has always some to sell and at the last count there were 170 plants. Her plants are subject to periodic rotting but she finds this not too hard to stop if decaying leaves are removed, part of the water changed and an aquatic plant fertilizer added. A university lecturer has suggested to Miss Lax that this complaint may, in part, be due to a specific mineral deficiency. In another of Miss Lax's tanks, where Amazon sword plants grow and reproduce magnificently, *Cryptocoryne* plants tend to stay small.

Mrs. C. Grant of Leicester had *Cryptocoryne* plants growing to the top of her 36 in. by 15 in. by 12 in. tank which had no filter, only coarse gravel and Malaysian snails. After treating an outbreak of white spot in the tank, her plants rotted away to dwarfs. Mrs. Grant cleaned out the tank and set it up again and now her plants, which she has had since the last war, are growing well again.

Mr. M. Oviatt-Ham of Gainsborough, has found, from his experiences with *Cryptos*, that water hardness matters very little provided that peat is used under the gravel. He also thinks that under-gravel heating gives good results and that a minimum depth of 15 in. of aquarium water is helpful.

From Ipswich, **Mr. A. R. Cook** writes to say that a plant of *C. beckettii*, which in five months only grew a few new leaves in a tank with an under-gravel filter, produced two new shoots inside a month, when the under-gravel filter was replaced by bottom corner filters. No peat or loam is used and the 24 in. tank receives 50 watts of light for 8

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Goldfish breeding: egg development

by A. Boarder



MANY breeders have some difficulty in getting a good hatch from their goldfish eggs. I hear of many failures from breeders and feel that some hints on the subject might be of interest to many. These remarks apply mainly to those breeders who control the breeding by either removing the eggs on plants to hatching tanks or where a pair of fish have been placed in a separate tank, removing them when sufficient eggs have been laid.

Under the above circumstances it is possible to watch the development of the embryo in the egg and the actual hatching. The first cause of non-hatching is that the eggs have not been fertilised properly. In such cases the eggs will show a distinct mass of mildew all round them. These infertile eggs show up quite plainly on the water weed whereas the fertile ones may be rather difficult to see. The causes of infertility of the eggs may be due to several factors. As the eggs are laid by the female fish, the male should be in fairly close attendance to shed his milt so that the eggs may be fertilised. The milt contains thousands of tiny spermatozoa which are like miniature tadpoles which swim around in search of an egg. When one finds and penetrates an egg it is fertilised. It has been recommended at times that it is better to have more than one male in attendance to ensure a vigorous spawning and a good fertilisation of the eggs. As the sperms of one male could fertilise the eggs of very many females this is not necessary; one male per female being sufficient.

I have often heard of females being so worried by a number of males that they have died. This could also happen if there is insufficient space for the female to escape the attentions of the males, or there is not enough water plant cover in which the female could hide away. If a healthy male is chasing a female when she lays her eggs it is probable that many of the eggs will be fertilised alright. However, this is not the end of the story as many things can go wrong with the hatching after this.

Presuming that the eggs have been safely obtained and that they are in the hatching tank, the most important step is to make sure that a good temperature can be maintained to hasten the hatching. One of 70° F., has been found by me to be very good. With a constant temperature at this range it is possible to get a hatching in three and a half to four days. Unless a heater is supplied it may be difficult

to keep this temperature up all the time. This fluctuation need not do any harm but it must be realised that if the temperature drops for some hours each night then the time of hatching will be lengthened. At a lower temperature the eggs will take longer to hatch and at one of 60° F., it is possible that it will be up to a week before hatching takes place.

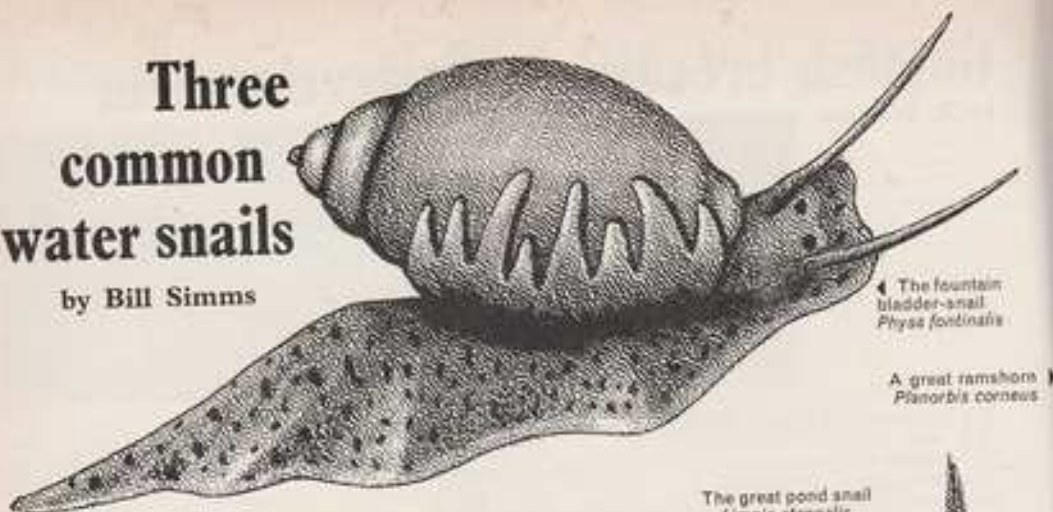
There are several reasons why a fairly quick hatching is desirable. In the first place there may be some pests present among the water weeds which could eat some of the eggs and so the sooner they hatch out the fewer are likely to be destroyed. Although a fairly warm water may be good for the hatchlings it must not be assumed that it is better to warm the water up much higher than 70° F. It should be realised that the warmer the water the less oxygen will it contain. One may think that the oxygen content of the water will not affect the development of the embryo in the egg. This is quite wrong, as it is most important that plenty of oxygen is available at all times for the proper development of the embryo within the egg. As the development progresses and approaches the time for hatching the need for oxygen within the egg is increased.

The lack of sufficient oxygen can be seen when fry fail to hatch after the embryo has been seen well developed inside the egg. This dying of the embryo can take place about half way through the hatching period and when partly formed ones can be seen in an egg but nothing hatches out, it can be assumed that lack of oxygen in the water has been the cause. Where the water in the hatching tank is maintained at about 70° F. for most of the time it is most important to provide some aeration. This need not be very fierce but if it is provided at one end of the tank there will be a constant steady stream of re-oxygenated water flowing around the tank. Another point worth considering is that the hatching tank should not be too deep; a fairly shallow tank is much better as the water within is likely to be better oxygenated throughout than it would be in a deeper one. It may be found that when bunches of water weed containing eggs are placed in a rather shallow tank, this weed is inclined to float to the surface, especially when the water warms up a little. To

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Three common water snails

by Bill Simms



← The fountain bladder snail
Physa fontinalis

→ A great ramshorn
Planorbis corneus

THE aquarist always thinks of water snails as those that live exclusively in water; but this section of the snail family includes some—usually very small—that have re-adapted to a life on land.

All members of the pond snail family have two sets of tentacles but while some have their eyes at the tentacles tips, those I am dealing with have their eyes at the base of these long feelers.

The Great Pond Snail, *Lymnaea stagnalis*, has long, pointed tentacles and a greyish body. In the north of England it is not so common as in the south. Because this snail is frequently sold for use in aquariums there are one or two peculiarities about it that should be noted.

When kept in a large pond or lake, the Great Pond Snail justifies its name and grows to a large size of about 2 inches in length. But when it is confined to smaller stretches of water it never grows so big.

This is a fact that has been confirmed by many experiments in which batches of eggs have been divided between various sized bodies of water and kept under controlled conditions. Despite the feeding and other conditions being constant, the young snails in the larger volumes of water have always grown to much larger sizes than those in smaller waters.

Therefore a large *L. stagnalis* brought from a lake and installed in an aquarium is attempting to live in water not suited to it and rarely thrives. Any specimens of this snail used in an aquarium should be small so that they will adapt to it more readily.

The reason for this size adaptation is not known but to some extent it applies also to fish, for none grow to large proportions unless kept in suitably large volumes of water.

Many people think that being a snail the Great Pond Snail feeds exclusively on vegetable matter but this is not so for its food is more than half animal matter. Some of the larger ones can even catch and eat small fishes.

In view of their slow progress it might be thought that

The great pond snail
Lymnaea stagnalis



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water snails would have great difficulty in catching a fish but they sneak up so gradually, and grip so well, that many instances of fish catching have been observed. So—be careful of this snail where small fish are present.

In contrast, the Ramshorn Snail, *Planorbis cornutus*, is a true vegetable eater and can do little harm in an aquarium unless it be to the young growth of treasured plants. Normally it lives on the bottom and grazes on the debris there; but some kinds of ramshorns prefer the surface and these live mainly on algae and debris.

All ramshorn snails have a very efficient breathing apparatus, and can use either water or air for their supplies. During winter some hibernate in the mud and have no contact with an air supply except through the muddy water. Others that live nearer the surface, frequently breath just air but if the surface is covered by ice they immediately change over to breathing water. Obviously any of the ramshorn species are suited to life in an aquarium, for they can adapt to all sorts of conditions.

A much lesser known water snail, the Fountain Bladder-snail, *Physa fontinalis*, can add interest to any well-planted cold-water aquarium. The shell of this one is only half an inch long but it has the peculiarity of twisting the opposite way to most others—it has a left-hand thread.

In addition the soft part, or foot, has a fringe that creeps up around the shell almost covering it at times. This feature is most distinctive and where a tank is well aerated and well stocked with plants that reach the surface, this snail can prove to be quite attractive.

Its shell is very thin, horn-coloured, and almost transparent and where its shiny surface peeps from between the fingers of the mantle fringe it looks most attractive. The Fountain Bladder-snail is a very active snail and can often be found in running water where the water plants come close up to the surface. It appears to have only good habits from our point of view and though small is well worth stocking.

Goldfish breeding

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keep the wood under the surface it is necessary to fix a couple of thin sticks across the tank to prevent the weed from rising too high.

The need for plenty of oxygen around the hatching eggs can be realised when one considers the actions of many of the parent fishes which constantly fan the eggs to aerate them. This is done by the male stickleback and many of the tropical fishes. I have had complaints about bad hatchings due to this lack of oxygen, when the breeders have stated that they have seen the fry in the eggs almost complete, even showing the eyes and in some cases having seen a movement. When the embryo has started to develop and then nothing hatches I am almost certain that in most cases the lack of oxygen in the water has been the main cause of failure.

Some of the pests which can attack eggs in the hatching tank can be controlled but a few may be almost too small for the aquarist to discern. Any snails present on the weed will be a source of danger to the eggs and no snails should ever be tolerated in the hatching tank or even in the breeding pond or tank. A frequent watch should be kept on the tank to make sure that no snails are there. One of the worst pests which can remain undiscovered is the larvae of a tiny midge. This creature is almost transparent and can move about over the water weed quite easily. It could eat into an egg and destroy the embryo. The only way to make sure that these pests are not present is to sterilise the spawning medium before allowing the fish to spawn on it.

Whilst the eggs are developing it is sometimes recommended to encourage the formation of a quantity of infusoria in the water so that the fry can find plenty to eat when they require it. I do not think that this is a good idea, as too much infusoria could foul the water and restrict the amount of oxygen which is so important for the developing embryo. In any case the fry when they hatch will eat nothing until they are free swimming and the safest food is then, "Liquify" or some similar substance.

In my next article I propose to deal with the treatment of the fry from the time of hatching to about a month old.

Book review

"Enjoy Planting Your Aquarium", by William H. Dewhurst M.D., published by The Pet Library Ltd., New York, and edited by Earl Schneider, price 2s. 6d.

This 32-page book is one of a new series of soft-cover books dealing with pets of many kinds. A large number in the series are devoted to the interests of aquarists. For such a relatively low cost, "Enjoy Planting Your Aquarium" is, I consider, good value for the beginner or not too advanced aquarist who wants to learn something about the growing and arrangement for decorative purposes, of aquarium plants. Many of the commoner plants are dealt with in the text, and the book is well illustrated with some good colour photographs and a number of drawings of plants.

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

Comments on "What is your opinion?"

IN only one of the letters printed in the August issue of *The Aquarist* is the depth of the gravel and sub-gravel mediums mentioned. Mr. W. Savage stated that he uses 2 in. soil 1 in. gravel. Under-gravel filtration would appear not to be used by him. Even Mr. Whiteside omitted this important statistic when referring to under-gravel filtration. My experience would show that Geoffrey Leach's trouble is insufficient gravel depth. The use of pots filled with a planting medium covered with gravel is excellent. The conclusions drawn by Stephen Harris I am in full agreement with. Peter Brown mentions no gravel depth, neither does he state for how long he uses under-gravel filtration; his troubles could lie in these factors. Mr. G. McMorran is a man of my own heart, except that he fails to mention gravel depth; about large grained gravel I am unable to comment as I always use it as it comes (after washing of course). I would agree with Mr. D. Hubble that burrowing snails are cheaper and as good as under-gravel filtration, but I find them to be a nuisance in so much as they flatten the gravel thus spoiling the contours one creates; also they sift the larger gravel particles to the surface. In general I find they spoil the decor of the tank. Of course, in the fish house where decor is of little importance, they do not matter.

My own findings are as follows:—Like Mr. S. Fox I had trouble with caked gravel caused by the excessive accumulation of bacteria. I cured this only by running the under-gravel filter at night. This trouble was followed by excessive mulm; the gravel depth was sloped towards the rear of the tank between 1-2 in. I find mulm always builds up in gravel at this depth and the cure is to deepen the gravel. I find that the ideal tank for under-gravel filtration is one of 15 in. depth which allows gravel depth of at least 3 in. Half an inch of peat can be laid in the middle of this, but it must be remembered if peat is used, to cover it with sufficient depth of gravel to prevent it from rising.

In my two 30 in. x 15 in. x 15 in. tanks which are indoors the gravel depth varies from 3-5½ in. There is no peat under the 2 in. area, but 1 in. of peat has been

placed under the deeper areas. Under-gravel filtration operates only when the lights are out. Lighting is on a time switch and outside filtration operates when the lights are on. The filters are changed automatically by relay.

Lighting consists of fluorescent strip 15w on for 12 hours a day. The plants did not do too well under this light although cryps did not seem to be affected so I supplemented the fluorescent light with 2 x 15w tungsten bulbs operated on a sub-circuit for three hours switched by time switch. Sword plants, valis, sages, apogonets are now doing extremely well and the water is crystal clear. I forgot to mention that the fluorescent lighting is "Grolux".

On talking to aquarists it would seem that most of the troubles that occur with under-gravel filtration are caused by insufficient gravel depth. Makers of these filters state that deeper gravel is beneficial so to all users of these filters I would say "deepen that gravel". I would also conclude from my experiments that the depth of gravel has something to do with the amount of time that this type of filtration can be operated beneficially but further experiment along this line is necessary to prove this point. Perhaps Mr. Whiteside and others would care to experiment in this, publish their findings and see if we agree.

JOHN A. WHITE,
155 The Broadway,
Southall, Middx.

Prevention of Floating Peat

FROM the letters published in your August edition of (What is your opinion No. 3), most aquarists appear to have trouble in preventing peat from rising to the surface of the water. I overcame this problem by using old nylon stockings as bags, to hold the peat. All that is required is the leg of the stocking (after being washed several times in clear water, to remove any soap), which may be cut to any length, and filled with peat to about half the depth of the bag. The bag can then be put under the gravel. Once the plants have become established, it is difficult to move a plant without disturbing the bag

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of peat, as the roots will have passed through the nylon mesh into the peat. In a case where a plant may be moved in the future, it would be wise to make a small bag, just large enough for this particular plant, so that the bag can be moved at the same time as the plant without disturbing the other plants.

This idea of using a nylon bag can also be used where a special plant requires a special planting medium, such as sand or clay, and coarse gravel where a plant requires a loam medium. The nylon bag does away with plant pots which are bulky.

I hope this idea will be of help to other aquarists.

Yours faithfully,

R. I. NOLAN,
Walter Street,
Blackburn, Lancs.

Brine Shrimps

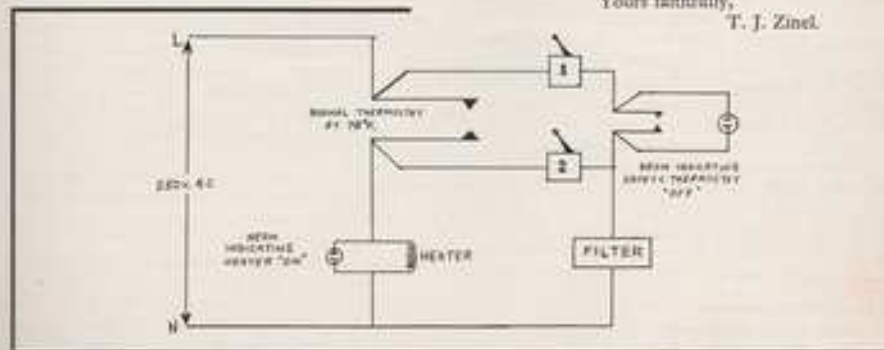
I FIND a good method of raising brine shrimp is to use 2 large sweet jars (or more) filled with clean sea water. I use sea water because I do not get good results at all with the preparation shown on the photo of eggs.

My 2 jars are situated on a window-sill where they get plenty of light. One thing which is more of an advantage than a disadvantage is that seaweed will grow on the sides of the jars; the shrimp will feed on this but it gets difficult to get the shrimp out. I don't feed them Liquifry because the water has got enough natural food in it till the seaweed starts to grow.

To get the shrimps out of the jars I take 4 or 5 feet of plastic air tubing, a jar and a piece of very fine muslin or a handkerchief. Place the muslin over the top of the jar (it is a good plan to wet the muslin beforehand). Place one end of the tubing in the jar (not near the eggs) and give a short suck through the other end. Let the water fall into the air through the muslin and then pour it back into the jar where you have enough shrimps. Fill a cup with luke-warm tap water and place the muslin in the cup so that the shrimps are in the water; this takes some of the salt off them. Leave them for 5 minutes and then feed them to the fry.

Yours faithfully,

ROBERT ALLAN (14).



Anabantid Fry
HERE is a method of raising anabantid species of fry, in particular reference to the critical period during which the fry develop their labyrinth and I have found that upwards of 70 per cent. of the hatch can be brought safely past this stage.

I thought it might be of interest to some of your readers. I have constructed a close fitting aquarium cover and drilled two holes to take two lengths of air line hose as shown. I then made a shroud to cover this and the aquarium out of old heavy curtain material, leaving a section clear for observing the fry.

I feed the fry by means of pre-mixing the food with a little water and by using a plastic syringe, pass it through the tubes.

This method I have found keeps the air above the water at exact water temperature.

Yours faithfully,

K. COLLINGSWOOD,
Deal, Kent.

Circuit for Higher Temperatures

LAST year, I had a serious attack of white-spot in my aquarium. Every fish, except two Rainbow Cichlids, had the disease in various stages. I set about producing a circuit so that a higher temperature could be produced without disturbing the normal thermostat, which kept a temperature of 78°F. I bought another thermostat, and set it to 89°F. I wired up as shown on the circuit, and it was quite successful. The white-spot disappeared within two weeks. When switches 1 and 2 were closed, they short-circuited the normal thermostat and set the higher rated thermostat into operation. When the desired temperature was reached, the thermostat opened, and a neon-light flashed on (No. 1A).

Also when 1 and 2 switches are on, the filter operated while the safety thermostat was on, thereby distributing the heat evenly. If the higher rated thermostat is not in use, No. 1 may be switched on, thereby circulating and filtering the water. If No. 2 alone is switched on, the filter will only come on if the normal thermostat is on, thereby distributing the heat.

I would welcome comments on this circuit.

Yours faithfully,

T. J. ZINEL.



The Junior Aquarist

Lesser water-boattman *Corixa*

Pond life and jam jars

by K. U. Blinkworth

MANY young pond-dippers are content with a catch of newts, sticklebacks and tadpoles whereas, with a little careful searching, a very varied and interesting haul of smaller animals can be made which, with a little thought, can be kept for weeks in large jam jars. The jars should be fitted up with well-washed sand and pond weed and kept in a light position, though not in direct sunlight where the water may become overheated and lose much of its dissolved oxygen.

Overcrowding must be avoided for two reasons: firstly, those creatures which prey on others are not above eating their own kind and secondly, overcrowding will result in a shortage of oxygen for those creatures which breathe the oxygen dissolved in the water. The notes on each species will give some guidance.

With regard to collecting apparatus: besides a hand-net and bucket, a mud scoop for sieving mud—a wire-framed domestic sieve with a coarse mesh is quite good—and a very small aquarium net for sorting out specimens at home, easily made from a piece of wire and an old nylon stocking, will be very useful. A low-powered hand lens for studying specimens is a very worthwhile investment.

Finally, watch out for the water becoming foul with decaying food: if you are unable to feed the creatures, they will live for quite a long time but I would suggest that they be returned to the pond from which they were taken after a week or so: do not put the carnivorous ones in the garden pond if it contains fish which you value!

Lesser Waterboatman (*Corixa*)

Swims rapidly and can fly. Grubs about on the muddy bottom of the pond.

Breathes as *Notonecta*; the body is often enveloped in a film of air giving it a silvery appearance.

Food consists chiefly of decaying vegetable matter sucked through the short beak, therefore add a little surface mud to the water in the jar; it will soon settle. These Waterboatmen are harmless and three or four could be kept together.

The body is flatter than *Notonecta*; it swims with the back uppermost. The life cycle is similar to that of *Notonecta*.

Water Scorpion (*Nepa*)

This insect is not a scorpion but a water-bug related to the water boatmen. It is to be found crawling among weeds and on the mud in very shallow water near the bank. It is slow-moving and looks like a piece of rotting leaf. It breathes air through a tube at the end of the abdomen, which is protruded above the water surface. Weeds are needed for the creature to climb up to the surface or else the water should not be more than three-quarters of an inch deep.

It captures other pond creatures with its powerful front legs and sucks the juices through the short beak. The water scorpion is safe to handle but, as it is carnivorous, it is best kept by itself.

Interesting features are the breathing tube made of two channels, the front legs which will close on any object touching their inner sides, and the well-developed wings although the insect is not known to fly. Incidentally, the upper surface of the abdomen is a bright orange-red.

this is visible at the sides when the animal is breathing. The young are similar to the adults but wingless.

Greater Waterboatman (*Notonecta*).

Swims rapidly and can fly. Settles among weeds and plants near the bank.

Breathes air at the water surface so pond weed is not essential. It is, however, useful for the insect to hold on to as it is lighter than water.

Food consists of other small pond creatures such as nymphs of mayflies, damselflies, larvae of some flies and water beetles, etc., as well as other boatmen.

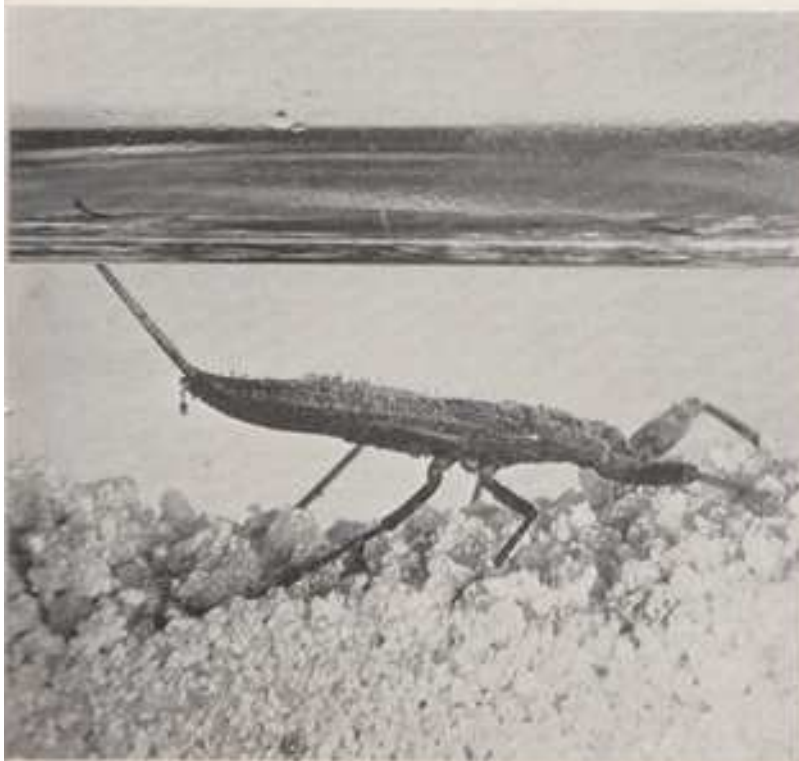
Keep one per jar; be careful if you have to handle them as they are supposed to be able to give a painful piercing "bite".

Features to note are oar-like hind-most legs, air channels on underside of abdomen leading to breathing holes on thorax; air also taken under wings; sharp, beak-like mouthparts. Eggs laid on water plants, hatch into nymphs which are similar to adults but smaller, creamy-green and wingless. *Notonecta* normally swims with underside upmost.



Top Like many aquatic insects, *Notonecta* has to come to the water surface to replenish its supply of air. The hairs near the posterior end of the body are water-repellent so that in this region the body is in direct communication with the air and an inverted meniscus in water surface can be clearly seen. This also helps to hold the insect at the surface. The insect in the photograph is infected by a fungal parasite on its hindmost legs.

Left This side view of the Water Scorpion shows the tip of the breathing tube protruding above the water surface; the apparent break in the breathing tube is due to refraction of light by the water. When breathing the abdomen shows a typical alternate expansion and contraction so that the breathing system is well ventilated; this is found in most of the larger insects.



Colour testing female guppies

by B. Whiteside

IN the cheaper price range, there are a number of excellent little American books about guppies. In a number of these there are instructions for carrying out a hormone test on female guppies, to get an idea of the colours which the females will pass on to their male progeny. Such a test is most useful in that it takes a lot of the guess-work out of guppy breeding and helps prevent the guppy breeder from wasting time, money and tank space on raising batches of young to the stage of near maturity, before finding out whether or not the majority of the male youngsters are of the colour for which the guppy breeder is aiming.

Although the instructions may be fairly simple for the American reader to carry out, the British guppy fancier meets with some problems if he wants to colour test his females by following the American instructions. The test depends upon the use of the male hormone, testosterone. It may not be easy to obtain the hormone locally, in the chemical form recommended—methyl testosterone. The local chemist may be able to help but as the hormone is usually prescribed by doctors for medical use, it may not be available in the pure form of methyl testosterone but may possibly be in another chemical combination, in a liquid form for injection, or in the form of tablets. The latter will contain other substances used to combine the small quantity of hormone into tablet form. Such other substances I am told, may take the form of gums or resins, etc. Some of such substances may be harmful to the fish if used to make up the hormone solution, as well as the use of the actual hormone itself which is a most potent substance, especially when used with the relatively small female guppy.

I managed, after some trouble, to have a solution of the hormone made up by a local chemist friend. The solution was made from tablets containing methyl testosterone. Tablets to the value of 0.1 gm. of methyl testosterone were powdered and stirred to dissolve in 100 mls.(ccs.) of 70% ethanol (ethyl alcohol) and the resulting solution was made up to 1 litre by adding 900 mls. of distilled water. The resulting stock solution obviously contained some insoluble solids which floated as a scum on the surface of the solution, but from future results it was obvious that most, if not all, of the actual hormone content had dissolved or been dispersed in the solution. I decided not to filter the solution but instead shook the brown bottle in which the solution was stored, before use each time. In not filtering the solution I may have been at fault, as I will suggest later.

Having obtained approximately the solution required, other problems arose. The books stated that two drops of the solution should be added to each carefully measured gallon of water in the container in which the fish were to be kept during the period necessary for the test to take effect. Firstly the books were written for the American market and therefore amounts of solution were probably gauged to the American gallon measure, which is slightly

less than our Imperial gallon (U.S.A. gallon is approximately 0.833 Imperial gallon). This I found out to be the case, therefore to work out the number of drops needed for a given number of "British" gallons, some calculations were necessary. Problem number two concerned the size of a "drop"—a vague quantity which could depend upon the bore of the tip of the dropper used and upon the viscosity of the fluid being used. I decided to use an eye dropper, an instrument which needs a steady hand.

Having carefully measured out the exact number of Imperial gallons of water for my female guppies, into a large glass jar, I installed a heater and thermostat set at the same temperature as the water in which my virgin guppies had been living. It is necessary to use an empty container for the fishes' water as a given aquarium containing gravel and rocks will not contain the exact number of gallons of water which it is stated to contain in reference books, due to the unknown quantity of water displaced by the gravel, etc.

Having allowed the water to mature for a few days, I added the calculated number of drops of hormone solution and then introduced the chosen five virgin female guppies.

Now for some further problems with which I met. One book stated that the dosage of hormone added to the water should be repeated on alternate days. Another book mentioned the initial dose, but did not mention any further additions afterwards. Which was correct? Enquiries resulted in my being told that additions on alternate days was the correct procedure, and this advice I followed. One book stated that the period necessary for the females to display their colours would be from two to six weeks and that a stronger concentration of hormone solution, although it would work more quickly, could result in rendering the fish sterile.

In testing two batches of females, my results have been interesting, if disappointing. I have found that younger fish show their colour change more quickly than do older females. As well as the colour change, some of the females develop other male characteristics such as a change in structure in the anal fin, rendering it, in its lower rays, rather like a poorly developed gonopodium, and an elongation of the dorsal fin, together with a general narrowing of the rounded body shape into the slimmer male form. Most of the fish in my particular strain have retained their hormone-induced colour change permanently, and some have retained a proportion of their other body change characteristics.

The first batch of females which I colour tested were placed in the solution and did not appear to be disturbed by the hormone in any way. After seven days the fish, although eating well, had become thinner and their dorsal and caudal fins had elongated. Patches of dark pigment in these fins had developed into a deep black colour. Two fish out of the eight had a faint red and white colour on

their caudal fin as well as the black patches. The other fish had blue/white and black patches. All of these fish had been sired by a red delta-tailed male, this being the colour which I wanted to fix. I removed the fish two days later. They had been in the solution for nine days in all, and I had obtained two females showing red coloration which I desired. The fish were returned to their former home aquarium. Beside them other untreated females looked rather drab.

Later I placed two younger females from another brood into a similar solution and as both showed signs of red coloration after seven days, they were removed to their former home as were the first batch. During both treatments small amounts of water were added to the container to keep the water at its original level, i.e., making up for losses by evaporation. Naturally, little water was lost during the periods of seven or nine days but it seemed important to keep the volume of water, and hence the concentration, constant.

It is now nine months since the first batch of fish were removed from the hormone solution, but what went wrong? Of the second batch of fish tested, both females died—one after three months, the other three weeks after the first. No signs of the commoner diseases were visible on either fish and I put their death down to some inner damage caused by testosterone, months before. It had possibly affected the fishes' metabolism and left some damage which eventually caused the death of the fish.

Although none of the first batch of fish has died, none has produced any young ones. Both batches of females have had sharing their tanks with them a succession of male guppies, both young and older, thus eliminating the possibility of the male fish being sterile. It must be assumed that the females have been rendered sterile. The fish from the first batch have continued growing and have reached normal adult sizes. The American books stated that it would take a number of weeks for the effects of the hormone to wear off the fish but after so many months this point has long since been passed and so can be discounted.

Although no young guppies have been produced, several of the female fish have shown the usual signs of being pregnant. Several weeks ago, and again today, I noticed, on the plants in the tank which houses the tested females and several male fish, some small round eggs, about twice the size of a pin head and clear, except for a small clouded area at one point on the inside circumference of the eggs. These have obviously been laid by the treated females. Only a few were noticed each time but others were probably laid and eaten. There seems no chance now of the fish

ever producing any young. What conclusions can be drawn from my disappointing experiences? Obviously, my female guppies have been rendered sterile by the hormone solution. Whether the causative agent was the actual hormone content or some other compound used in the making of the tablets I do not know, but it was most probably the hormone itself.

This raised the question of whether the fish were placed and kept in too strong a solution or whether they were kept in the solution for too long. The latter would not seem to be the case as the books stated that testing would take up to six weeks. On the former score I can only say that I followed the rather conflicting information in the several books as closely as I could, after consulting other books, an expert on tropical fish and a qualified pharmaceutical chemist. Obviously, the technique of colour testing female guppies by the use of methyl testosterone has been, and is being used, by guppy breeders in America and in Britain, but judging from my own disappointing results it is necessary for potential new users to realise just how potent this hormone is and to consider the possibility of rendering one's fish sterile or indeed of eventually causing their early death.

Perhaps I have been at fault in my interpretation of the instructions given in the American books, although I took great care to follow these carefully and to augment these with advice from experts. The cause of my failure may possibly be due to having used an unsuitable form of the hormone, although it seemed to be, on the surface, what was required, according to the books.

Should you consider colour testing your female guppies not having done so before, might I suggest that you reconsider the use of hormones or else investigate the subject even more fully than I did. Don't depend completely upon the instructions contained in books. If possible, consult another aquarist who has had personal experience of the use of the testing technique. It's most disappointing to choose one's best females, test them for colour, pick out the appropriately coloured ones, house them with suitable male fish, and end up with nothing but well coloured sterile or even dead fish. Take my advice and retain some of the better shaped virgin females and don't subject them to the hormone test. Should you render your tested fish sterile, you will at least have another chance of continuing your strain of fish, even if it takes longer and is much less certain in that you have to wait until the male progeny develop their own colours before you know whether or not you have been wasting your time.

Special colour supplement for November

The November issue of the *Aquarist and Pondkeeper* will contain a special colour inset on the following articles: The future of coral fish and Some observations on the brown discus (part 2)

All the articles will be illustrated in colour and accompanied by an authoritative text. **Be sure of your copy by placing an order now!**

Some observations on the brown discus—

by Graham Cox

SOME thirteen months ago, I obtained five brown discus fish (*Symphysodon aquifasciata axelrodi*) from a well-known London importer, after twice previously having purchased fish of this species. On the first occasion I was completing a teaching contract in Zambia and had three specimens flown out from London. The aircraft carrying the fish was re-directed from Ndola, Zambia to Johannesburg, and when the fish finally arrived some nine hours later, they were found to have assumed the characteristic deep nigger-brown shade which this species always exhibits prior to and after death. Undeterred by this expensive failure, I decided to wait till my return to the U.K. before again attempting to study these noble but delicate cichlids. Two years ago, I purchased three young two inch specimens from a Sussex dealer and despite meticulous and elaborate care, all three were dead within a fortnight.

The following notes were written as a consequence of over a year's observation and recording, carried out on every conceivable occasion. The passage on colour patterns alone took three full day's study from 9 a.m. to 6 p.m. during which the fish were subjected to many different conditions and varying situations. I have every reason to believe that what is written below applies to all brown discus, and, with the exception of the section on colour patterns previously mentioned, that it also applies to the less common green discus (*Symphysodon a. aquifasciata*) and blue discus (*S. a. haraldi*). I trust that my somewhat expensive tuition in the keeping of this fish will benefit my reader and prevent him making the mistakes I have made.

Purchase of Stock

Since *S. a. axelrodi* is the cheapest and most frequently imported of the discus species, one must assume that it is the most easily collected, the most prolific, has the widest geographical range, and probably, therefore, is the hardiest of the four species known at present. As a result of the latter assumption, I strongly advise that anyone attempting to keep discus for the first time chooses the brown variety. With regard to size, I have frequently read, and more frequently been told by dealers, that the best way of raising discus cichlids to maturity, and of obtaining a pair, is to buy half a dozen small (1½ in. to 2 in.) specimens and grow them on. In the light of my experience with six previous small discus, I believe I have disproved both theories. To begin with I think that any fish which has survived to the half-grown stage (approx. 3½ in. dia.) has inherited a better, more competitive genetical constitution, because of its obviously higher survival value than its dead siblings. In other words, from an evolutionary point of view, it is a more viable unit, better equipped to survive. With regard to the "You'll get a matched pair for breeding purposes" theory, I refuse to accept the statement of many writers that the fish is unsexable (see sections headed in



Part 2 "Sexing" and "Colour Patterns"). Therefore the purchase of larger (3 in. to 4 in.) specimens presents little difficulty as regards obtaining a pair. Also I feel it necessary to state here that, whereas many fish, and cichlids in particular, do express a preference when choosing a mate, this only obtains when they are members of a largish group. I have frequently put cichlid pairs (e.g. *Pterophyllum* and *Pedmanochromis* K.) together after seven days separation behind glass sheets, and, assuming that both fish are sexually mature and further, are ready to spawn, successful matings nearly always occur.

In consideration of the above points therefore, I strongly advise the purchase of specimens which are at least 3½ in. in diameter.

Details of Tank Furnishings

When purchasing a fish which grows to 7 in. when

Part I



Pompadour fish

adult, one must obviously have a large tank available, no matter what the size of the fish is at purchase. Any tank smaller than 30 in. by 15 in. by 15 in. is most unsuitable. My specimens are in a tank measuring 48 in. by 18 in. by 15 in. (i.e. 18 in. deep) and even in this tank, the female, now 5 in. long is beginning to look somewhat cramped. The tank has two undergravel filters working non-stop. On top of the filter next comes a lady's nylon stocking full of peat and coiled so as to cover completely the upper surface of the filter. Finally, over the peat comes a fine gravel which should not be larger than $\frac{1}{8}$ in. to $\frac{1}{4}$ in. average dia. (for reason see "Feeding" below). The depth of the gravel is a matter of personal choice, but one must consider the amount needed to give an efficient filtration action, and allow for the deeper roots of large plants such as the Giant Amazon Sword Plant (*Echinodorus intermedius*). There is no air stone aeration

since I find that the water movement effected by the outlet pipe of the u.g. filter is adequate, and doesn't work against the filtering action as a diffuser tends to do. The tank is densely planted but certain interconnecting areas are maintained free of all plants for reasons which will be explained under the heading "Feeding". The plants used are *Vallisneria spiralis* (back and sides in dense thickets), one Giant Amazon Sword Plant, *Hygrophila*, Water Wistaria, *Bacopa Gabonensis* and *Myriophyllum*. Inside the tank also, at the back, is a "Y" shaped piece of oak root, lying horizontally, the two limbs of which are 2 ft. 6 in. long and 3 in. in diameter. In the right hand rear corner is a tall "cave" constructed of millstone grit rocks. Covering the tank is an aluminium hood painted inside and out with polyurethane paint. There is no cover glass. Illuminating

Continued on page 191

Our experts' answers to tropical fish-keeping queries

Many queries from readers of "The Aquarist" are answered by post each month, all aspects of the fancy being covered. Not all queries and answers can be published, and a stamped self-addressed envelope should be sent so that a direct reply can be given.

In a pre-war aquarium magazine, I came across a reference to a coldwater panchax. Can you tell me the scientific name of the species referred to?

The only coldwater panchax we have heard of is *Oryzias latipes*, usually known as the rice fish or medaka. A native of Japan, this fish has a temperature range of from the middle fifties to the middle eighties (°F).

Please give me some hints on sexing and breeding the silver tetra (*Carnegiella spilopleura*).

First and foremost it is not easy to tell the sexes apart until the fish reach a fair size, but specimens that have reached 2½ in. in length are sexed by comparing colours and outline. The ventral keel of a female is more rounded than that of a male. Also, the female is the larger bodied and, in general, more silvery fish of the two. Egg-laying takes place during a wild chase in and out of the water plants. Remove the parent fish after spawning is over. The eggs hatch and the fry become free-swimming within a few days. They need Infusoria and other fine live and/or dried food.

I have just bought a very slim bodied fish which my dealer believes is a species of *Phago*. This fish is refusing to take any food and seems too terrified to move out of a corner. Have you any knowledge of the requirements of fishes of this genus?

Fishes of the genus *Phago* are retiring. They need to be left alone in a well-planted aquarium to adjust themselves and recover from their nervous shock brought about by the sudden change in their environment. In their larger sizes they will chase after, and maybe attack, other fishes. They can be faddy about their food, and should be tempted with livebearer or other fry, or well-grown *Daphnia*, gnat larvae, and the like. A temperature in the neighbourhood of 75°F (24°C) is about right.

Please tell me the maximum length of *Pomatoxetus calyptrae*, and is this fish well-behaved enough to live in a community tank?

Pomatoxetus calyptrae reaches just over 3 in. in length and is quite peaceful.

Sometime ago I read that a disease called Bilharzia, that affects the intestinal tracts of human beings living in tropical countries is brought about after contact with water snails. Do you think that keeping a tropical aquarium in the home is likely to spread this disease in temperate countries?

The snails that act as host to the disease-carrying larvae are not the kind kept in the tropical aquarium. You can be certain that if there was any danger of bilharzia affecting tropical fish-keepers it would have manifested itself long ago. You must not overlook the fact that the tropical fish-keeping hobby has been in existence for nearly a hundred years.

I have heard that a tropical aquarium fish kept in Germany is called the mourning-cloak characin. Presumably this is a new species? Can you give me its scientific name?

Transmarchallanus, or the mourning-cloak tetra, is just the German aquarists popular name for *Gymnocorymbus terezae*, better known in this country as the black widow fish.

One of your experts referred to the striped barb as *Barbus fasciatus*. As a so-called expert, he should have known better. This species should be referred to as *Puntius fasciatus*.

Puntius or *Barbus*? What does it matter except to the ichthyologists, and even they cannot make up their minds which epithet should be used. Like the botanists, the ichthyologists devote much time and energy in approving or disapproving or one another's pronouncements. Not all ichthyologists are in agreement which of the barbs should be referred to as *Barbus*, *Puntius*, or, for that matter, *Capota* or *Barbodes*. For the present, we prefer to embrace all the aquarium barbs, despite the fact that some anatomical differences, under the generic name of *Barbus*.

Is the translucent bloodfin a sub-species or "sport" of the common bloodfin?

The common bloodfin is *Aphyocharax rubripinnis*; the translucent bloodfin is *Prionobrama filigera*, a different fish altogether. But because *P. filigera* bears some physical resemblance to *A. rubripinnis* it has come to be called the translucent bloodfin. In point of fact, many years ago the translucent bloodfin was referred to the genus *Aphyocharax*. Both fishes, however, are characins and both hail from South America. *A. rubripinnis* from Argentina; *P. filigera* from Brazil.

I have been told that aquatic plants do not contribute any oxygen to an aquarium and all oxygen in the water is derived from the contacting air. Is this true?

It is not true. Some water plants give off quite a lot of oxygen under the influence of a bright light.

I have acquired from a fishkeeping acquaintance two fish which he says are a true pair of *Aphanius dispar*. However, he seems unable to tell me very much about their requirements (temperature range and preferred food) in captivity. Please can you help me?

From all accounts, *Aphanius dispar* flourishes best in a well-lighted spacious aquarium filled with matured tapwater to which a level teaspoonful of sea salt has been added per gallon. But once this amount of salt has been added do not introduce any more. A temperature of from the middle sixties to the middle seventies (°F) is quite in order, raising to about 78°F (26°C) for breeding. Algae, and other soft-foliaged vegetation should be given as food, as well as gnat larvae, tiny worms, live *Daphnia*, and the like.

Is it possible to keep a painted terrapin (*Chrysemys picta picta*) for any length of time, and in the best of health, in a tropical aquarium?

Provided the terrapin is bright-eyed, alert, and eager for food when you purchase it, the answer is yes. But to keep it in good condition it must be fed at least once daily on such things as raw meat, earthworms and small maggots. Do bear in mind, however, that this terrapin is a predator, and as it increases in size and boldness it will tear and devour the fishes sharing quarters with it.

Is it a fact that *Tilapia mossambica* will stay alive and even breed in a tropical marine aquarium?

It is a fact that this species—which in its natural state is sometimes found in brackish water—can be acclimatised to seawater.

Will the upside-down catfish (*Synodontis nigricans*) molest other fishes in a community tank?

In our experience *S. nigricans* minds its own business and is quite harmless in a community tank.

Coldwater fish-keeping queries answered by A. Boarder

Can I keep Sticklebacks and Minnows together in a tank?

I do not think that it would be a good idea to keep these fishes together. The Sticklebacks could injure the Minnows. If you do keep these fishes together make sure that the Sticklebacks are not carrying any pests or disease as many caught in the wild have been found to be in a bad condition.

I have a fairly large pair of goldfish with which I want to breed more youngsters. They are supposed to be a true pair but so far I have seen no eggs. Is there anything I can do to encourage them?

You may not have a proper pair. Even if you have it is not always certain that they will breed. There seems to be something strange which sparks goldfish off to start chasing and breeding. Sometimes it is the weather and at others the temperature of the water. Sometimes they can be encouraged by running in a quantity of fresh water late at night. It has often been noted that the best time for them to spawn is when the water contains plenty of oxygen and is in a pure state.

I wish to start breeding fantail goldfish. Could you recommend a good book on these fish, not too expensive?

The book "Coldwater Fishkeeping" as advertised in *The Aquarist*, will give you all the information you need to be successful.

Can you tell me what is the best thing to put on concrete in a pond to stop it leaking?

If a concrete pond is made correctly it should not leak. One part of cement to three of clean sharp sand makes a mixture which is quite waterproof. It is only if the mixture is made badly or with stale cement that leaks could occur.

Will the fancy varieties of goldfish be all right in an outdoor pond?

Some of the fancy varieties of the goldfish are not suitable for beginners to have in the garden pond. The Veiltrails can suffer from fin-rot and fin-congestion in a bad winter. The Moors have telescopic eyes which are liable to damage in a concrete pond. Types with flowing finnage are unsuitable, these include the Veiltrail Moor and the Oranda.

I have bred a number of goldfish this year and also a few last year. My problem is that some of the fry are gold but are carp-like in colour. Why is this?

All the visibly scaled goldfish have youngsters which are carp coloured when they are young. They do not change colour to the desired red until some time after. This time depends on the strain, the temperature of the water, the swimming space and the amount of food given. Some strains can change in less than a year given good conditions. Other strains take a couple of years or more. Some never colour up at all. In a sunny summer it is certain that the youngsters will change colour earlier than they would have done in a dull one. Young goldfish imported from Italy have turned colour early because of the warmer climate.

I have lost some fish in my pond and when I wrote to you I learned that copper can be dangerous to fishes. I now remember that I bought some water lilies and tubs to put them in. I was told by the vendors to bind the tubs with clothes wire to prevent them falling to pieces when the bands rusted away. I now find that the tubs had been vinegar barrels. Do you think the copper killed the fish?

The fact that the copper wire was in the water could account for the death of the fishes. The vinegar soaked barrels would not improve matters as copper is more dangerous in soft or acid water than in alkaline.

How can I eradicate Tubifex worms from my tank?

Stop all artificial feeding for a time and your fishes will clear the Tubifex up.

Until recently I had several sunfish and fed them exclusively on white worms. When my stock ran out I got some daphnia and fed with them. I soon lost all the fish from what was diagnosed as gilt flukes. My tank has a temperature of 66-68 F., and I wonder if I could keep any kind of livebearing tropical fish which would provide a live food source for the sunfish?

It would be possible to keep Guppies and Platys in your tank. They are livebearers but I do not think that they would produce enough live foods for your Sunfish. Most of these tropical livebearers do not have very many young at a time and as they are small when born their food value would not be very large. I suggest that your best idea would be to have several boxes of white worms. I use several concrete ones which stand one on the other. I have never been without a supply of them during the last twenty years at least.

Water plants in my pond are raised each year by insects which look like the fly on roses, etc. Is there anything I can kill them with without harming the fishes?

It would be extremely dangerous to your fishes to use any of the ordinary insecticides. Those containing D.D.T. and similar preparations would prove fatal to the inhabitants of the pond. The safest way to deal with the pests is to play a strong hose jet on the plants. This will knock them off into the water. There, many will be eaten by the fishes especially if you withhold food for a few days.

We have just acquired a large tank with a number of goldfish and a quantity of plants. Do the plants have to be renewed or do they seed and multiply that way?

Your water plants are not likely to seed but most kinds multiply fairly rapidly as long as they have some nourishment in the tank. This is usually provided by the droppings from the fishes. You will find that many of the plants will need shortening from time to time, or even some pieces will have to be completely removed from the tank.

I have a tank positioned at right angles to a window facing west. There are several kinds of plants in it and there are two 40-watt bulbs for lighting. I keep these on for about four hours every evening. Is this sufficient for the growth of the plants?

If the tank is already receiving plenty of light from the window this should be quite all right. On dull days the lights could be on for a longer time. You will see by the growth and health of the plants if they are getting enough light and you can regulate accordingly.

I have a large tank and intend keeping some fancy coldwater goldfish. During the summer months I know that they will be all right. However, the room is unheated and in the winter the temperature of the water may drop to 40 F. or below. Will this be safe for fancy goldfish? If not, what do you recommend?

Your tank will be quite safe for such fishes as fantails, shubunkins and lionheads. These have no long flowing tails and so are less likely to come to harm in very cold weather. The veiltrails, Orandas and veiltrail moors would be rather prone to attacks of fin-congestion in very cold weather. It would be possible to have an aquarium heater with a thermostat set at 50 degrees F. for use in the winter, when these long-finned fishes would be quite safe.

Marine queries answered by T. Ravensdale

How deep can fish go into the sea?

Coral fishes seldom swim lower than 200 feet and, as special equipment would be needed to photograph or even see fishes at a greater depth, we are not very sure of any of the deeper water fish or animals. It is interesting to note, however, that fish have been seen at a depth of seven miles and many ocean bed photographs have shown a considerable amount of life on the bottom especially sea slug and starfish. As the latter feeds on shellfish it is reasonable to assume that even these must live at such depths. Coral fishes, however, are shallow water creatures and live in what is known as the Continental shelf. All large bodies of land have a shelf surrounding them and these can stretch out into the sea for up to 200 miles before the great plunge into the deep sea. Great shelves drop sometimes for three miles in a sheer drop. There are one or two exceptions, the most notable being the five miles drop from the peaks of the Andes to the sea followed by another sheer drop of four miles to the sea bed. This is the greatest height difference on earth being nine miles from top to bottom.

Are wrasses community fish?

This depends entirely upon the population of your community aquarium. Many Wrasse will attack and devour any fish small enough to be considered as food. The answer is to keep large wrasse (and they can reach three feet in length) only with fishes at least as large as themselves. No wrasse will, of course, reach its full size in the aquarium but they do have extremely sharp teeth which they know how to use. Wrasse such as *Loxotrypa* are extremely vicious whereas the *Aequidens* is seldom that way inclined. Wrasse, incidentally, will be of a better temperament if given a large shell in which to curl up at night. Without a "home" it is more liable to be aggressive and can damage even the largest of neighbours.

I shall be visiting some of the Continental public aquariums shortly and would like to know where the best selection of coral fishes can be seen.

Undoubtedly the best coral fishes I have seen on the Continent are at the Antwerp Zoo, Belgium. They have about 20 tanks set up with all types of coral fishes and great interest is shown in them by the director, Mr. Van den Bergh. Another zoo interested in tropical salt water fishes is the Amsterdam Aquarium. Their fishes are well worth the trouble of a visit. Surprisingly, Germany does not boast very good salt water collections and the Frankfurt Zoo only has one tank although this is of very interesting construction having the glass extended above the frame of the aquarium and fitted in with strips of plastic and not potty. They are also experimenting with plants. France seems to show no interest in tropical fish of any description and coral fishes are almost unheard of.

What is your opinion?

continued from page 178

hours daily. Other plants in the tank are twisted Vallis., *Ludwigia*, *Nemophila*, *Hydrophila* and *Echinodorus tenellus*.

Mr. H. E. J. Forno, from Addlestone in Surrey, says that *Cryptocoryne* species are the only plants which will grow in his tanks. He has two 40 warts of tungsten lighting over a 30 in. by 15 in. by 12 in. tank for about 7 hours each evening. The tank receives little natural light and the water conditions are pH 6.8; hardness 180ppm Ca CO₃ 1 in. gravel, about 1-3 in. deep is used. Mr. Forno finds that reducing the lighting has no noticeable effect on plant growth. The inadvertent addition of some unsuitable rockwork to his tank made the water hardness rise to nearly 900ppm Ca CO₃ for a time. This was only discovered when the fish appeared to be out of condition, but *C. affinis* and *C. Neuhilii* grew as well as before. Mr. Forno's plants have never flowered but *C. affinis* sends out many runners and the root systems are very large. Filtration is only used when the glass sides have been scraped or the gravel disturbed during the planting. Other plants in the tank are *Sagittaria*, *Hydrophila* and *Bacopa* but these plants neither send out new growth nor do they die off. They just remain static.

Wrexham, N. Wales, is the home of Mr. G. C. James, who sent an interesting letter. Mr. James grows a wide selection of species of *Cryptocoryne* and the following are just a few of the points which his letter contains. To grow the plants successfully, he uses a mixture of unwashed coarse and fine river gravel, enriched with pieces of solid peat, and yellow clay from a river bank. He aims for fairly soft, slightly acid water and not too bright a top light. Plants should be disturbed as little as possible and never more than a quarter of the aquarium water changed at any one time. New plants should be given plenty of room to get established, and, Mr. James goes on, under-gravel filters should on no account be used as *Cryptos.* will not thrive with the unnatural water movement at their roots. Prolonged use of activated charcoal will also have a detrimental effect on plants. If a leaf or leaves on a plant begin to disintegrate, Mr. James removes the rotting leaves as soon as they are seen. This usually prevents some of the other plants from having the same thing happen to them. He also finds snails useful in keeping the plants free from dirt and algae which fish such as the sucking loach cannot remove.

Two more questions for discussion:

(1) What have been your experiences in the treatment of diseases in aquarium fishes? (2) What kind of tank background do you consider best for the home aquarium?

Once again, two requests. Please PRINT your name and home town or city clearly, and please send your letter as soon as possible so that it will arrive in time to be included in the next article. A few letters have arrived after I have sent off my former articles to the editor and hence I have not been able to include these late arrivals.

THE AQUARIST

The brown discus

continued from page 187

the tank are two 40 watt bulbs and one of 100 watt—all incandescent types and used for 4-6 hours per day.

Water conditions

Although I have read the writings on this subject (including the work of those who have carried out careful analyses of Upper Amazon water) and recognise the need for soft acid water for Discus fish, I was unable to provide more than twenty gallons of peat treated rainwater at the time of setting up the tank. I had to top up with South Sussex tapwater with a hardness of 21.5 DH and alkaline reaction of pH 7.2. However, I reasoned that since my Neon and Glowlights tetras were living healthily in water straight from the tap, then I hoped that Discus could probably be conditioned to accept this hard water also. Subsequent experience has supported this supposition. The hardness of the water in the tank at present, after many partial replacements is 20.25 DH and the acid reaction is pH 6.9. This somewhat lower hardness and slight acidity is undoubtedly due to the incessant buffering action of the peat which, you will remember, is beneath the gravel and over the filters. Before placing the oak-root in the tank I shaved off a few chippings into a beaker containing fresh tapwater (pH 7.2) and tested the reaction of the water after ten days. It was pH 6.8 (slightly acid). The root is also therefore buffering the water in the tank.

The temperature of the water, after much experimentation was found to have a marked effect on the well-being of the fish. Unlike Zebra danios, which are reasonably content at temperatures ranging from 60°F. to 90°F. I found that the Discus were very intolerant of any temperature outside the 78-88°F. range. Even at the relatively high temperature of 78°F., the fish became very susceptible to certain maladies which I will describe below. All in all, the optimum temperature appears to be 84-86°F., but I give them occasional four hour spells at 90°F. to kill off a proportion of the water-borne micro-organisms which seem to aggravate them when present above a certain level, although the two u/g filters keep the water very clear in addition to acidifying it. In conclusion, in this section, I feel that hard-water in itself is not detrimental to Discus, but that the teeming populations of Infusoria which thrive in water with a large percentage of the bicarbonates, sulphates and chlorides of calcium and magnesium, at a pH of 7.0 to 7.3, are a source of annoyance and danger to the fish. Also, of course, the low pH of peat water is not conducive to the growth of high bacteria and infusoria populations.

Next Month: I shall discuss sexing, feeding, special precautions, fighting and diseases. Illustrated in full colour.

October, 1967

Final reminder

“Champion of Champions” contest

Arrangements are now in hand for the completion of the “Champion of Champions” contest and the entries are now being assembled.

There are a few entry forms still outstanding from open shows which have been held recently and in this connection we should like to stress to finalists that the final date for acceptance of forms will be the 14th October, 1967, and no entry will be accepted after this date, with the exception of those clubs with whom we have already made separate arrangements.

Secretaries are, therefore, requested to ensure that entry forms are posted to the office of *The Aquarist* addressed to *The Aquarist (Contest)*, The Butts, Brentford, Middlesex, immediately after the open show has been held.

The winner of the “Best Fish in the Show” award at the British Aquarists’ Festival will be included in the “Champion of Champions” contest.

Benching will take place on Thursday, 26th October, and arrangements are being made at the Manchester main line stations for the collection of fish sent by rail. Special labels are available if required. The handling of these fish and collections will be in the hands of experienced stewards.

Any winner of the “Best Fish in the Show” award who has not yet received *The Aquarist* gold-plated award pin is advised to contact the Secretary of the Open Show for the appropriate form.

If in difficulty these forms are available from

**The Aquarist & Pondkeeper,
The Butts, Brentford,
Middlesex.**

The Festival will be open to the public from 10 a.m. to 8 p.m. on Saturday the 28th October and from 10 a.m. to 7 p.m. on Sunday the 29th October.

Admission to the Festival, including the Belle Vue Zoo and Amusement Park will be 3/-. Children half-price.



Geckos in the vivarium

by H. G. B. Gilpin

EARLY in April this year a friend, knowing my interest in reptiles, brought me back a couple of Wall Geckos (*Tarentola m. mauritanica*) which she had found running up and down the walls and scampering across the ceiling of her bedroom in Malta. They travelled in a small wooden box, with a perforated lid, and survived the journey in excellent condition.

On arrival the geckos were placed in a 16 inches long by 11 inches wide and 11 inches high, all glass tank, covered at the top with two sheets of glass, so adjusted as to provide a small air vent. The floor of the tank was covered with fine gravel to a depth of one-and-a-half inches upon which was arranged a gently sloping, bark covered, log and a small piece of turf. Some large brown moths, caught in a trap and transported successfully in a cellophane bag, were introduced as food.

These geckos are interesting little animals with the curious habit of flattening themselves against any surface with which they may be in contact, pressing themselves so closely against it that their elbows protrude above their backs. Sometimes they appear to be most content when they can feel pressure all around them and delight in wedging themselves into a fissure in the bark, between two stones or between the log and the glass wall, remaining completely still, so much so, that they ignore insects which

may crawl near or even over them. At other times they will spend hours clinging to the vertical glass walls of the tank or to the underside of the cover, in full view of an observer.

The larger of the two is six inches and the smaller four-and-a-half inches in length. In colour they are sandy brown on the dorsal surface, with a yellowish tinge on the front parts shading to pinkish towards the posterior end, mottled with darker brown, which same colour continues in circular bands along the length of the tail. The ventral surface is a uniform pale grey merging into creamy yellow at the edges.

They have considerable powers of camouflage, their skins changing from light to dark according to their surroundings, so that when wedged against a furrow in the bark they become almost invisible. Their habit of remaining utterly immobile for considerable periods during the daytime adds further protection against detection by possible enemies.

The greater part of the body is covered with tiny, raised nodules and the tail is protected by longitudinal rows of sharp pointed scales. The triangular head, wider than it

is long, is large in proportion to the body and the staring, basilisk eyes with their pale yellow irises and vertical, slit like pupils protrude above the surface. The expansive mouth contains a broad, pink tongue which when extended from the side of the mouth is long enough to reach above the eyes. Indeed they seem to use this organ for keeping the eyes free from foreign particles. A hole leading to the auditory passage is visible on either side of the head behind the eyes.

Each foot, both fore and hind, carries five toes. Their spatulate tips, bluish on the underside and acting as suckers, enable the animals to run at astonishing speed up a vertical sheet of glass and to move effortlessly across the underside of the cage cover.

To begin with the tank containing the geckos was placed on a table in front of the window in a room warmed by a fire but not centrally heated. It soon became apparent that such conditions were far from satisfactory. Daily the geckos became more lethargic and in spite of an abundant supply of insect life they were not seen to eat anything. After five days it was possible to place a hand in the cage and touch one of them without it moving away. Obviously this was a danger warning indicating the necessity for immediate action.

A new cover was prepared, this time of hardboard, edged with one inch square wooden strips so that it fitted snugly over the top of the tank. A three inch by three inch piece was cut out of the hardboard and replaced with perforated zinc to provide ventilation and an electric light bulb socket, connected to the mains, screwed to its underside. A 25 watt bulb was fixed in the socket and the current switched on.

Within a matter of hours a marked change took place in the geckos. Stimulated by the warmth of the bulb, their almost comatose condition was replaced by a welcome return to vitality. No longer was it possible to touch them. Although entirely undisturbed by anything, moving or stationary, outside the glass the insertion of a hand and near proximity of a finger provoked in them an incredible outburst of activity. They flashed across the gravel, over the log and around the sides of the tank almost too quickly for the eye to follow.

This resurgence of energy, whilst extremely gratifying, produced its own problems. The slightest raising of the lid in order to put something into the tank was fraught with danger of the geckos disappearing over its edge. Also, since much of the food supplied was winged and itself active, it became increasingly difficult to introduce more insects without those already present escaping.

Fortunately, the solution to this problem was a simple one. A hole, large enough to admit a hand, was cut in the hardboard lid and one end of a nylon net sleeve attached to its edges. The other end of the sleeve was closed with an elastic drawstring. This device worked admirably and any necessary attention to the tank can now be made without difficulty.

The day after the heating element was installed the larger of the two geckos was seen to eat two insects and since then both have been feeding regularly. As wide a variety of food as possible is supplied, including meal-

worms, moths, spiders, beetles, young stick insects, blowflies and locust hoppers. The last two seem to be the most popular and on this diet the geckos are thriving.

About a fortnight after the geckos were provided with a higher temperature the larger began to slough its skin. The process took several days to complete. Much of it came off in large, pure white patches, impressed with every indentation of the skin. The skin of the tail was the last portion to be lost and this was shed as a complete unit.

When frightened, wall geckos emit a long squeak of protest. So far ours have not uttered a sound, which perhaps suggests they have found nothing to protest about!



A clutch of Gecko's eggs

Potamogeton crispus

by B. Fry

THESE are no species of submerged plants more easily cultivated in a garden pond than the coldwater potamogetons, and among the finest of the several species to be found in the wild in this country, or listed in the catalogue of a nurseryman specialising in aquatics, is *P. crispus*, commonly called the curly or curled pondweed on account of its wavy-edged leaves, which attain a length of about 3½ to 4 in., and a width of about ½ in. In colour they are a lovely translucent greenish olive that soon becomes suffused with red under a strong light. They grow alternatively along the branching stems. *P. crispus* is brittle, but any pieces snapped off the stems will soon grow into new plants if they are anchored to the bottom. Like lots of aquatic plants, *P. crispus* flourishes most luxuriantly in a bed of clay or non-fibrous yellow loam.

Apart from its decorative charm, curled pondweed is of immense value to the pondkeeper. First and foremost it is an oxygenator. It is also a heavy feeder and provider of shade. These two qualities help to keep free-swimming algae at bay. It will even do well in the indoor aquarium, provided the light is long and bright and the temperature does not rocket much above 65°F. (18°C.) in warm, sunny weather. As a spawning plant it attracts the attention of goldfish as well as frogs and toads.

Around the aquariums

by Mike Sheedy

THREE young female Baikal Seals (*Phoca sibirica*) arrived by air from Moscow to the London Zoo. They were put straight into the Small Seal Pool at the back of the Linn House. They are from 3 to 4 months old and measure some 2 feet long.

No live specimens of this species reached England until 1959, when the London Zoo received its first pair from the Moscow Zoo centre. They are found only in Lake Baikal in central Siberia and are the only seal species to be found exclusively in freshwater. Lake Baikal, the deepest lake in the world, measures some 400 miles long and reaches a depth of some 5,700 feet. These small seals measure up to 4 ft. 6 in. long when adult and weigh about 140 lbs., and are more numerous in the northern parts of the lake. The males and young females spend the winter in the water, breathing through air holes kept open by constant use, and only the pregnant females winter on the ice, giving birth to their pups in lairs made under the snow in February and March.

★ ★ ★

"Alice" the London Zoo Walrus, died recently and it is thought the animal suffered some kind of freak fall during the night, which caused an internal haemorrhage. Her condition otherwise was absolutely perfect.

"Alice" came to the London Zoo from Russia in December last, and was the first of her species to be seen at the London Zoo since 1952. She was the only Walrus in the country.

Recent births in the Reptile House at the London Zoo have included a family of seven North American Chicken Snakes (*Elaphe quadrivittata*), and a family of nine North African Eyed Skinks (*Gehaleis ocellatus*). The young skinks are not on exhibition (at time of going to press), but some of the Chicken Snakes are.

Both families were brought into the world "behind the scenes" to ensure best possible conditions for their survival—the snakes being hatched from eggs in an incubator.

The same Chicken Snakes produced a family about a year ago in the Reptile House. These harmless snakes get their name from one of the items of their diet—though their size is against them swallowing whole chickens—and they do occasionally take a chick or a hen's egg. They are proficient tree climbers and wild bird's eggs and young and small mammals form the larger part of their diet.

The Eyed Skinks were born to a pair which were brought back from Morocco by schoolmaster twins John and George Newmark. The babies, now 2-3 in. long and fed on fruit flies, mealworms and young locusts, will grow to some 9 in. The skinks are a very large family of lizards in some of which the central part of the lower eyelid is transparent so that they can see whilst burrowing in the sand, even with their eyes closed. The Eyed Skink is so named because some specimens of the

species have a blue eye-like series of markings along the side of the body. The general coloration otherwise can perhaps best be described as resembling a cream and light brown tweed.

★ ★ ★

New arrivals have booked into the Bristol Zoo's Reptile House. They include two monitors and two royal pythons. Meanwhile a bring-em-back-alive expert in Trinidad is on the alert for box constrictors for the Bristol Zoo.

★ ★ ★

A harvest from the sea that would delight the owner of a sea food restaurant has just been delivered to Bristol Zoo. But the lobsters, crayfish, bass and whelks that arrived were not destined to delight a gourmet. Instead they will continue their lives giving pleasure to thousands of visitors to Bristol Zoo's aquarium.

They were caught off the Devon coast by the boat of the Plymouth marine research laboratory. Transferred to a tank of sea water they continued their journey to Bristol. Here they have joined the fascinating collection of marine life which has been a feature of the Zoo Aquarium for some years.

Replenishing the all important supply of fresh sea water is a problem that Bristol Zoo has solved with the co-operation of a local company of sand dredger steamship owners. When one of the dredgers is due to dock, word goes out to the skipper that Bristol Zoo want to fill a 700 gallon tank with sea water. So instead of pumping it all out, a supply is brought to Bristol docks where the Zoo lorry waits at the wharfside.

★ ★ ★

Calling at the Zoo at Cromer recently I found the place in very nice condition and gradually building up the many different exhibits. Here I found very clean and dry enclosures and also a very nice sea-lion pool with several sea-lions on exhibition.

The zoo is owned by Alex Kerr, one time wild animal trainer with Bertram Mills Circus, and I was delighted to find he was making good progress with his zoo. He told me that some day he hopes to add an Aquarium to the zoo and let's hope that Alex will succeed in this venture as already he takes a keen interest in various kinds of fishes.

Alex's wife Olga (daughter of Coco the clown) has just given birth to a lovely baby boy and both mother and baby are doing fine.

★ ★ ★

A letter recently from Mr. C. H. Keeling of the Ashover Zoological Gardens informs me of a new magazine he has started. It deals with articles from pet keeping, to the R.S.P.C.A., various aspects of scientific zoology, etc., etc.

He has promised to send me a copy of the first edition as soon as it's available so later I hope to give a better description of the magazine and its contents.

News

from AQUARISTS' SOCIETIES

AT the July meeting of the **Worthing Tropical Fish Club**, Mr. Jolliffe from Portsmouth A.S. gave a talk on his experiences with tropical fish and showed some slides of his fishes. The club was pleased to welcome several new members to the meeting.

THERE were twenty-nine members at a very interesting and entertaining evening at the August meeting of the **Horsforth A.S.** The main feature of the evening was a tape recording played from one of the corresponding members who lives in Detroit. Mr. Barry Trayer spoke about the Barrier Reef and his society which is the Queensland Reef and Tropical Fish Society, and Sophie Hans Hale, Secretary of the Spanish Aquarists Federation gave a rundown on Spanish Aquarist Societies and their activities.

The juniors have increased the club funds by taking part in a sponsored walk, and raised £8 for the Society. An Inter-Club show is to be held on 1st and 2nd October and three other societies have been invited. The results of the August table show were as follows: A.O.V.: 1. Mrs. Hall; 2 and 3. Mr. P. Kirby; Junior A.O.V.: 1. Mr. P. Kirby; 2 and 3. Mr. P. Dickinson. Special: 1. Mrs. J. Dickinson. Anyone interested in joining the club should contact the chairman, Mr. R. Hampson, "The Headlands," Sooty Lane, Horsforth, Yorks. Tel. No. Horsforth 3062. The secretary, Mrs. B. Helm, 29 Wellington Road, Leeds 12, Tel. No. Leeds 21025, would also like to hear from anybody wishing to become a corresponding member.

THE **Rotherham & District A.S.** held two meetings in July, the first being for the election of 1967-68 officers. The original working committee from when the new society started was re-elected, as follows: Chairman: J. Neelands; Vice-Chairman: L. J. Hall; Secretary: Mrs. J. Hall; Treasurer: R. Harrison; Committee: Mrs. D. Matthews, J. Clark and M. Glover. The latter has also recently been elected as Show Secretary, with Mrs. A. Harrison who is Social Secretary. The first meeting included an inter-club "Judge your own Table" show for all Classes. The prizes were given as follows, once again, to 1. L. Mousley (Junior member); 2. Patricia Pley; 3. D. Jackson; Thick Lip Gourami; 3. J. Shaw; Black Mollie. All entrants will be welcome at meetings which are held at The Bridge Inn, Rotherham.

AT a recent meeting of **Southend, Leigh and District A.S.**, the main attraction was the second leg of the Inter-Club series of table shows. The results were: Labyrinth (Golden Shiner) 1. A. J. Mason (Southend); 2. B. Young (Basildon); 3. E. Nicoll (Thurrock); 4. P. P. Capon (Southend). A.O.V.: 1, 2 and 4. R. Young (Basildon); 3. D. Durrant (Thurrock); Guppies: 1. Mr. Haselbury (Thurrock); 2. B. Chatterley (Southend); 3. and 4. D. Durrant (Thurrock); Dario, Rainbow and W.C. Minnow: 1. Mr. Mitchell (Southend); 2. N. Tansken (Basildon); 3. R. Pannone (Southend); 4. N. Tansken (Basildon). This gave the Club positions for this show as Basildon first with 15 points, Southend second with 14 points, and Thurrock third with 11 points. The total for the two shows held so far are: Thurrock 37, Southend 23, and Basildon 20. The final round of the competition is to be held at Basildon in October. During the judging, visitors and members were entertained with a slide show on marine fishes given by Mr. J. Williams.

The highlights at other meetings have been a quiz and a table show for barbs: 1. E. Thompson (Tipton); 2. P. P. Capon (Cherbury); 3. Mr. Mitchell (Cherbury); 4. S. Norris (Schabern). The Society is now in a position to loan their slide show on "Building a Fish House" to any

interested clubs. Southend members enjoyed the show so much that an encore was requested. For details of membership, or any information, please contact Mr. J. Willis, 17 Arundel Gardens, Weymouth-on-Sea.

THE **Winchester (Hants) A.S.** has been re-formed and the Society meets every first and third Friday in each month at the Winchester Conservative Club and newcomers can be assured of a warm welcome.

AMONG the clubs represented at the **Crawley College A.S. Inter-Club Contest** were Redhill and Ripgate A.S., Kingston A.S., Brighton and Southern A.S., and Preclaire A.S. There were 154 entries and the judges were C. A. Brown, F.R.A.S., J. Stillwell, F.R.A.S., A. D. Innes, F.R.A.S., and H. D. Brown, O.S.G.H. The winners were as follows: A.V. Barb: 1. Mr. Amosworth (Checker Barb) 77 pts.; 2. Mr. McMillan (Half Banded Barb) 74 pts.; 3. Mr. Taylor (Tiger Barb) 73 pts.; 4. Mr. Hovey (Checker Barb) 72 pts. A.V. Corydoras: 1. Mr. T. Guggen (C. giganus) 80 pts.; 2. Mr. Pearson (C. Pataca) 78 pts.; 3. Mr. Towell (C. Judo) 77 pts.; A.V. Cat in Lizard: 1. Mr. Greenhall (C. Pteropodops) 87 pts.; 2. Mr. Greenhall (P. Panchov) 86 pts.; 3. Mrs. Keyson (Betta Ball) 84 pts.; 4. Mr. Bass (Microgaster) 80 pts. A.V. Chameleon: 1. Mrs. J. H. Partridge (Lissonotus Tetra) 80 pts.; 2. Master Barnfield (Glow Light) 79 pts.; 3. Mr. Pearson (Rummy Nose) 78 pts.; 4. Mr. Bass (N. Beckford) 77 pts. A.V. Cichlid: 1. Mr. West (Brown Acara) 77 pts.; 2. Mr. Cammings (Severum Female) 76 pts.; 3. Mr. Cammings (Severum Male) 78 pts. A.V. Figlier & Labyrinth: 1. Mr. Bass (Dwarf Gourami) 79 pts.; 2. Mr. Bass (Lion Gourami) 77 pts.; 3. Mr. Windham (Paradise Gourami) 77 pts.; 4. Mr. West (Cumb Tail) 76 pts. A.O.V. Tropical: 1. Mr. Greenhall (Black Shark) 82 pts.; 2. Mr. Pasham (L. Uta) 81 pts.; 3. Mr. Sigmond (Silver Shark) 79 pts.; 4. Mr. Cooper (Flying Fox) 77 pts. A.V. Mollie: 1. Mr. Jackson (Sailfin Mollie) 72 pts.; 2. Mr. Pearson (Black Mollie) 71 pts.; Mr. Windham (Panda Shark) 70 pts. A.V. Platy: 1. Mr. Towell (Red Platy) 78 pts.; 2. Mr. Leach (Viceroy) 78 pts.; 3. Mr. Greenhall (Marigold) 74 pts. A.V. Swordtail: 1. Mr. Cammings (Red Eyed Red) 78 pts.; 2. Mr. Sigmond (Red Eyed Red) 76 pts.; 3. Mr. Windham (Red Eyed Red) 72 pts. Egg-Laying Toothcarp: 1. Mr. D. Ellis (Aph. Chelota) 78 pts.; 2. Mr. D. Ellis (R. Mollie) 78 pts.; 3. Mr. E. Cooper (Oryzias Latipes) 77 pts. A.O.V. Tropical Breeders (Labyrinth): 1. Mr. Pasham (Velvet Mollie) 77 pts.; 2. Mr. Bass (Guppies) 74 pts.; 3. Mr. Cooper (Meyersville) 73 pts. A.O.V. Tropical Breeders (Egg Layer): 1. Mr. Thomas (N. Anomalus) 78 pts.; 2. Mr. Bass (Lion Gourami) 71 pts.; 3. Mr. Pasham (Nont Tetra) 68 pts. A.O.V. Dario, Minnow and Rainbow: 1. Mr. R. Partridge (Rainbow Bovermanii) 81 pts.; 2. Mr. Towell (Pond Dario) 78 pts.; 3. Mr. McMillan (Black Striped Rainbow) 78 pts.; 4. Mr. G. Holt (D. Malabaricus) 75 pts. Common Goldfish: 1. Mr. Leach 75 pts.; 2. Mr. Waley 73 pts.; 3. Mr. Whittington 72 pts. A.O.V. Fancy Goldfish: 1. Mr. Leach (Carnot) 76 pts.; 2. Mr. Whittington (Fossil) 73 pts.; 3. Mr. J. Cooper (Nymphe) 72 pts. A.V. Shubunkin: 1. Mr. Whittington (British) 74 pts.; 2. Mr. Leach (Shubunkin) 72 pts.; 3. Mr. Whittington (British) 71 pts.

THE judges at the Table Show of the **Leyton Aquarists** was Mr. Eric Smart of Kew and he went on to give a talk on how to keep a strain of fish in good condition. This was full of interest to members, new and old, and he was able to answer a host of interesting questions for members. The results of the Table Show

were: 1. Mrs. R. Scadden; 2. J. Sallis; 3. D. Caspary; and for Male Guppies: 1. D. Caspary; 2. Mrs. R. Scadden; 3. D. James. At the last meeting members from Barrow were present. Mr. Alan Harget of Poynon gave a film and lecture on keeping exotic Marine fish, and this excellent talk did much to dispel some of the difficulties in keeping Marine fish. From the questions asked and the length of the meeting it was obvious the amount of interest there is for top quality information on the subject.

RECENT notes from the **Enfield and District A.S.** state that the meetings are held on the third Thursday every month. The August meeting was attended by 20 members. The result of the Table Show was: A.V. Tropical: 1. Mr. B. Smead (Aph. Anomalus); 2. Mr. J. Whitaker (Blending Horn Tetra); 3. Miss Collins (Mozambique Tilapia). The Show was judged by Mr. B. Collins of Walthamstow.

THE Edmonson Section of the **Fancy Guppy Association** has a new venue at 3 River Walk, Enfield (opposite Enfield Town Station) at 3 p.m. on the first Sunday in each month. The Autumn Open Show is to be held on 1st October for all classes of Guppies. Schedule from Mr. D. Garry, 64 Inverness Avenue, Enfield.

AT a recent committee meeting of the **Guildford and District A.S.**, the members drew up a winter programme until March which will include a water testing demonstration for hard and soft water; 50 film slides of fish, plants etc., with a tape commentary; a lecture on Electricity in the Aquarium, and four members will give short lectures on subjects: (1) How to make and glass an aquarium; (2) Plants; (3) Fish; (4) Furnishings. To end winter season there will be an Inter-Club Table Show.

The Club for the first time will be holding a Christmas draw to help increase the funds which are low. The Secretary, Mr. D. Nightingale, 37A, Gt. Goodwin Drive, Bushy Hill, Merrow, will be pleased to give further details to any prospective members.

THE third inter-club Table Show between **Rainworth, Mansfield and Hucknall & Bulwell Aquarist Societies** was held recently when about ninety keen aquarists from all three societies were present. Mr. Inman, a local aquarist, and a member of Nottingham and District A.S. were appointed judges for the Show. The results were as follows: Brokers Egglayers: 1. Mr. G. Wainwright (Hucknall & Bulwell A.S.); 2. Mr. Britton (Hucknall & Bulwell); 3. Mr. K. Whitaker (Hucknall & Bulwell); 4. Mr. Taylor (Rainworth A.S.); 5. Mr. G. Wainwright (Hucknall & Bulwell); 6. Mr. Smith (Rainworth A.S.); Toothcarp: 1, 2 and 3. Mr. R. Stockdale (Mansfield A.S.); Carfish and Loaches: 1. Mr. Allen (Hucknall & Bulwell) A.S.; 2. Mr. Adams (Hucknall & Bulwell); A.O.V. not in last Show: 1. Mr. Roggan (Hucknall & Bulwell A.S.); 2. Mr. A. Webster (Rainworth); 3. Mr. Allen (Hucknall & Bulwell); Novices: 1. Mr. Warren (Hucknall & Bulwell A.S.).

THE **Inter Club Exchange Society** is now functioning. The purpose of this Club is to bring into contact aquarists throughout the country by means of a monthly newsletter in which members may also advertise free their surplus plants and fishes for sale or exchange. The membership fee is 5s. per Club per annum. All those interested are asked to contact Inter Club Exchange, 78a Belton Lane, London, N.W.3.

AT the last Show held by **Yate and District A.S.**, the "Best fish in Show" award went to Mrs. P. Wright with her Corydoras Judo, and the highest points in the Show award went to Mr. J. Wheeler who took both the top for this

award and shield for both breeders classes. The rest of the results were as follows: Male Guppies: 1, Mrs. P. Wright (British T.F.C.); 2, and 3, F. Brown (British A.S.); 4, V. C. Hones (Chesham A.S.); Female Guppies: 1, F. Brown; 2, W. Gadd; 3, Mauser A. Arnold; Swordtails: 1, C. K. Craddock (Keyham A.S.); 2, Mrs. P. Wright; 3, F. Brown; Platies: 1, J. Wheeler (Trowbridge A.S.); 2, D. Walsh (Yves & D.A.S.); 3, G. Davies (Yves & D.A.S.); A.O.V. Livebearers: 1, E. Hones (Yves & D.A.S.); 2, W. Basher (Y.D.A.S.); 3, F. Brown; 4, J. Wheeler; A.V. Characins: 1, A. G. Cox (Weymouth A.S.); 2, D. Walsh; 3, F. Brown; 4, C. K. Craddock; Danios: W.C.M.M., Rathena: 1, A. G. Cox; 2, J. Wheeler; 3, R. Baskley; 4, F. Brown; A.V. Cat or Loach: 1, Mrs. P. Wright; 2, F. Brown; 3, E. Hones; 4, J. Wheeler; A.V. Catfish: 1, N. Binnie (Chesham A.S.); 2, E. Verdiner; 3, E. Verdiner; 4, A. Scott (Y.D.A.S.); Dwarf (Cichlids) Open Show: 1, A. Scott; 2, J. Wheeler; 3, Mrs. P. Wright; 4, K. Galsworthy; 5, P. C. Barber; 6, C. Galsworthy; 7, A. G. Cox; 8, F. Brown; 9, A. G. Cox; Amantobis: 1, J. Wheeler; 2, C. K. Craddock; 3, J. Wheeler; 4, C. K. Craddock; Fighters: 1, Mauser A. Arnold; A.O.V. Tropical: 1, R. Jones (Y.D.A.S.); 2, E. Verdiner; 3, C. Galsworthy; 4, Mrs. P. Wright; 5, J. Wheeler; 6, F. Brown; 7, F. Brown; 8, J. Wheeler; 9, F. Brown; 10, J. Wheeler; 11, V. C. Hones.

THE President of the Barry A.S., Mr. J. Brockhurst, was present at their monthly meeting held on 25 July. Members held the second leg of the Table Show with results as follows: Class "A" Eggheads: 1, Mr. and Mrs. Tippins (Petersham); 2, Mr. and Mrs. Tippins (Apington); 3, Mr. and Mrs. Payer (Red Tailed Black Shark); Class "B" Livebearers: 1, Mr. and Mrs. Payer (Male Guppy); 2, Mauser B. Johnson (Red Swordtail); 3, Mr. A. Ibberson (Red Swordtail); 4, Mr. A. Ibberson (Female Guppy). The Table Show was judged by the Chairman, Mr. Bryan Light.

A members' Judging Competition was held, the winner being Mr. E. Phipps, who judged a Siamese Fighting fish at 82 points, only one point below that awarded by the judges. Recently Mr. E. Phipps staged a very attractive show of fish and plants at the Barry Horticultural Show and won a Gold Medal. A similar display put on by them at the Cowbridge Horticultural Show won them a Silver Gilt Medal.

At the Annual Open Show, the judges were Mr. B. Clark, Mr. J. Littleton, Mr. G. Stone and Mr. W. Holland from Bristol A.S. and Mr. Callow and Mr. Short from Bath A.S. The results were as follows: Fighters (Standard): 1, S. Nelson, 83 pts.; 2, Dr. Warrmann, 84 pts.; 3, Mr. Sealhouse, 81 pts.; Fighters (Multi-Coloured): 1 and 2, G. Stone; 3, Mr. Sealhouse; 4, M. J. Pary (Moonlight Gourami) 78 pts.; 5, F. Brown (Thicklip Gourami) 74 pts.; 6, F. Brown (Thicklip Gourami) 73 pts.; 7, Mr. Chapman (Gourami) 73 pts.; V.H.C. J. Sanders (Great China Fishes) 71 pts.; Barb: 1, F. Brown (Auratus) 80 pts.; 2, F. Brown (Checker Barb) 80 pts.; 3, J. Parsons (Bicolor) 79 pts.; 4, Dr. Warrmann (Checker Barb) 77 pts.; Hemigrammus-Hypessobrycon: 1, J. Parsons (Black Wedge Tetra) 85 pts.; 2, F. Brown (Rosaqua) 82 pts.; 3, G. Pinner (Glofish); 4, N. Ginnell (Hemigrammus Putterli); V.C.H. J. Sanders (Bleeding Heart); A.O.V. Characins: 1, B. Gorwill (Abacetus) 85 pts.; 2, B. Gorwill (Red Eyed Tetra) 84 pts.; 3, Mr. Chapman (Pera Red Finned) 83 pts.; 4, F. Brown (Chaper) 80 pts.; Large Cichlids: 1, B. Gorwill (Tike Cichlid) 84 pts.; 2, B. Gorwill (Jack Dempsey) 83 pts.; 3, Mr. G. Tippins (Cichlasoma) 74 pts.; 4, Mr. Parsons (Thripa Theloni) 73 pts.; V.H.C. B. Gorwill (Dace) 72 pts.; Dwarf Cichlids: 1, C. M. Barber (Traderella) 86 pts.; 2, H. Gorwill (Pulsatillum Kribia) 81 pts.; 3, B. Gorwill (Orange Chromide) 78 pts.; 4, R. S. Wigg (Apistogramma Agassiz) 74 pts.; V.H.C. Mr. and Mrs. Tippins (Apistogramma Ramerzi) 73 pts.; Catfish: 1, F. Brown (Tiger Catfish) 86 pts.; 2, T. Phipps (Corydoras) 84 pts.; 3, T. Phipps (Corydoras) 82 pts.

A. B. Gorwill (Great Cutler Catfish) 80 pts.; V.H.C. T. Phipps (Corydoras) 79 pts.; A.O.V. Egglayers: 1, D. Davies (Red Tailed Black Shark) 81 pts.; 2, B. Johnson (Red Finned Shark) 77 pts.; 3, Dr. Warrmann (Rashora) 77 pts.; 4, F. Brown (Rashora) 76 pts.; Mollies: 1, C. M. Barber (Green Molly) 79 pts.; 2, S. Nelson (Molly) 78 pts.; 3, C. M. Barber (Black Molly) 79 pts.; 4, S. Nelson (Molly) 78 pts.; V.H.C. S. Nelson (Molly) 77 pts.; Swordtails: 1, M. J. Pary (Tuxedo) 75 pts.; 2, E. W. Chapman (Tuxedo) 74 pts.; Fishes: 1, R. S. Wigg (Tary Variatus) 81 pts.; 2, R. S. Wigg (Tary Variatus) 80 pts.; 3, R. S. Wigg (Tary Variatus) 79 pts.; 4, Mrs. A. James (Tary) 79 pts.; V.H.C. J. Morgan (Wagtail Tary) 79 pts.; Female Guppies: 1, R. S. Wigg 82 pts.; 2, F. Brown 80 pts.; 3, R. S. Wigg 78 pts.; 4, Mr. Humphreys 77 pts.; Male Guppies: 1, Mrs. Smith 80 pts.; 2, G. Stone 80 pts.; 3, F. Brown 78 pts.; 4, C. W. Smith; V.H.C. R. S. Wigg - Breeders Egglayers: 1, Dr. Warrmann (Paradise Fish) 78 pts.; 2, Mr.

Abbott (Brown Anax); 3, John Thorne (Pinnacch).

THE Annual Open Show of the Uxbridge & District A.S. attracted 200 entries and the prize winners were as follows—Purshad Aquaria: 1, Mr. Napier; 2, Mr. Towell; 3, Mr. Wain; 4, V. Guppy; 5, D. Durrant; 2, H. Pinner; 5, P. H. Halliwell; A.V. Molly: 1, H. Thompson; 2, T. Hennessey; 3, R. Savage; A.V. Platy: 1, C. E. Pike; 2, P. H. Halliwell; A.V. Sword Tail: 1, Mrs. L. J. Thorne; 2, A. Chadwick; 3, T. Hennessey; A.V. Barb: 1, A. Jamison; 2 and 3, D. Laiton; A.V. Characins: 1, P. Merritt; 2, D. Laiton; 3, A. Chadwick; A.V. Labyrinth: 1, T. Summers; 2, S. Moorey; 3, P. H. Halliwell; A.V. Fighter: 1, 2 and 3, D. Durrant; A.V. Car. Fish and Loaches: 1, A. Jamison; 2, V. A. Boreis; 3, H. Nayd; A.V. Catfish: 1, R. L. Thorne; 2, P. Merritt; 3, D. Laiton; Egg-laying Tooth Carps: 1, F. Wain; 2, D. Durrant; 3, D. Laiton; Danios, Rainbow and W.C.M.M.: 1, J. Stewart; 2, J. S. Pinner; 3, A. L. Chadwick; A.O.V. Tropical: 1, S. G. Moorey; 2, A. Jamison; 3, H. Pinner; 4, D. Durrant; 5, J. E. Baskley; Breeders Livebearers: 1, A. L. Chadwick; 2, S. G. Moorey; 3, A. Jamison. The award for the best fish is show went to Mr. B. J. Thorne of the Hounslow Club with his Cichlasoma Severum.

Other club activities have included inter-club competitions against High Wycombe and American Clubs, Uxbridge being the winners and a table show against the Mid-Herts Society who ran out worthy winners. The most recent club table show brought the largest number of entries to date, forty-one fish in five classes, a commendable effort in view of many enthusiasts were away on holiday. Prizes have also been taken at Reading, Basingstoke, Chichester and Herdon Shows.

AT a recent meeting of the East London Aquarist and Pondkeepers Association the Committee and Members were given a most interesting and entertaining evening with a lecture on Marine Tropical and Marine Fish,

well presented by Mrs. Wade and ably supported by Mr. S. Wade of Wade Aquarists, East Ham, together with coloured films of Marine life, and also demonstrations of the several appliances one has to acquire to keep these creatures. This was the first time the Association had had the pleasure of such a lecture and from the way it was received and appreciated by the unusually large gathering of Members and from comments received from various Members after the meeting it would appear that both Mr. and Mrs. Wade will be in demand from other Clubs in the future.

Anyone who is interested in this or any allied Aquaristic subject and would like to join, are requested to come along to Ripple Road School, Ripple Road, Berking, Essex, on either the first or third Friday of any month, at 8 p.m., or write or phone the Secretary, Mrs. Harris, 86 Leigh Road, East Ham, E.6. Telephone: GLO 1978.

THE Portsmouth A.S. held their Annual Open Show recently when over 400 entries were on view. There was a large number of interesting Regions in an Exhibition by Mr. and Mrs. J. Howard, and also a Warty Life Show by Mr. V. Bass. The P.R.A.S. Championship class for Cichlids held at Portsmouth this year was won by Mr. L. W. Jordan with a Blue Acara. The Portsmouth A.S. diploma for the best fish in the show was awarded to Mr. J. Stillwell for a Pumpkin Seed Sun Fish. Other results were as follows—Inter-club Purshad Aquaria Tropical: 1, Portsmouth A.S.; 2, Redhill and Segrave A.S. Inter-club Purshad Aquaria Goldwater: 1, Redhill and Segrave A.S.; 2, Cursons Club, Portsmouth; 3, Portsmouth A.S. Individual Purshad Aquaria Tropical: 1, G. B. Bass; 2, M. Mason; 3, Mrs. J. Stillwell; Individual Purshad Aquaria Goldwater: 1, Miss P.



The Aquarists' Badge

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

To obtain your badge send a postal order for 2s. 6d. to *The Aquarist*, The Broom, Hill Acres, Brentford, Middlesex, and please specify which type of fixing you require.

Steer (Chaperis) 74 pts.; 3, Mr. Steer (Chaperis) 80 pts.; 4, Mr. Nelson (Opaline Gourami) 88 pts.; Breeders Livebearers: 1, R. S. Wigg (Guppy); 2, R. S. Wigg (Guppy); 3, A. Williams (Guppy); 4, C. W. Smith (Guppy); V.H.C. Mr. Steer (Platy); Purshad Aquaria: 1, Mr. Dunagay; 2, Mr. Nelson; 3, Mrs. V. Tippins; Common Goldfish and Stoberkins: 1, M. Gadd (Goldfish); 2, F. Payer (Shubunkin); 3, N. Gadd (Goldfish); 4, N. Gadd (Goldfish); A.O.V. Goldwater: 1, Mr. P. Payer (Tench); 2, Mr. P. Payer (Tench); Best Fish in Show, F. Brown (Barbus Australis) 90 pts.; Best Barry Exhibit, S. Nelson (Red Fighter) 85 pts.

THE table shows of the Hounslow A.S. continue to be one of the most interesting aspects of the Society's activities. The results for the last two meetings shows are as follows: Payer: 1, Derek Woodward (Checker Barb); 2, Clive Walker (Kribia Loaches); 3, John Thorne (Congo Barb); Characins: 1, John Thorne (Nannostomus Anomalus); 2 and 3, Alec Hastings (Bleeding Heart Tetra); Cichlids: 1, Barry Abbott (Blue Acara); 2, Barry

because the deciding factor. Both societies showed 50 points each.

Results were—

Livebearers—1, Mr. L. Hunt (T); 2, Mr. G. Stood (T); 3, Mr. J. Hunt (B).
Cichlids—1, Mr. E. Wood (T); 2, Mr. J. Hunt (B); 3, Mr. J. Hunt (B).
Cathfish and loaches—1, Mr. S. Dean (T); 2, Mr. H. King (B); 3, Mr. L. Hunt (T).
Goldfish—1, Mr. E. Wood (B); 2, Mr. C. Parker (B); 3, Mr. B. Forman (B).

While the exhibits were being judged by Mr. and Mrs. Wade of Birmingham an interesting talk on breeding barbs and angel fishes was given by Mr. A. Skinner, also of Birmingham, who specializes in breeding the tiger barb.

THE Annual open show of the High Wycombe A.S. attracted 350 entries and the high standard of entries was commented upon by the judges. These new trophies donated by members, The Ann Seed Rose Bowl, The 1967 Committee Challenge Shield and The Chertford Charman Trophy were presented for the first time. The results were as follows—Best Fish in Show: Mr. T. J. Summers, Corydoras Julia.

TROPHIES

A.V. Flay, 1, Mr. B. H. Field (Platy Variator), 80 pts.; 2, Mr. P. H. Halliwell (Moon), 78 pts.; 3, Mr. H. J. Thompson (Red), 68 pts.; 4, Mr. J. Volary (Wagtail), 82 pts.; 5, Miss L. Stevens (Yellow Wagtail), 81 pts. A.V. Swordtail: 1, Mr. P. H. Halliwell (Tuxedo), 82 pts.; 2, Mr. R. G. Cox (Albino), 80 pts.; 3, Mr. P. Bennett, 79 pts.; 4, Mr. Chadwick (Red Eye), 78 pts.; 5, Mr. R. Hatcher (Green), 76 pts. A.G.W. Livebearer (Ex. Guppies): 1, H. J. Thompson (Welders Mollie), 99 pts.; 2, T. J. Summers (Liberty Mollie), 85 pts.; 3, D. J. Jones (Black Mollie), 82 pts.; 4, T. J. Summers (Liberty Mollie), 81 pts. Charfish Trophy for Characin: 1, B. Cooper (Leporinus Striatus), 83 pts.; 2, F. D. Hall (Leporinus sp.), 82 pts.; 3, R. J. Thorne (Albino Lampbrush), 81 pts.; 4, L. J. Thorne (Nannostomus Anomalus), 80 pts. A.V. Labrynth (Ex. Fishers): 1, P. H. Halliwell (Thick Lip Gourami), 83 pts.; 2, S. W. Zumbale (Gourami), 82 pts.; 3, T. J. Summers (Thick Lip Gourami), 80 pts.; 4, C. E. Pike (Opaline Gourami), 78 pts. Fishers: 1, Mr. C. Jordan, 80 pts.; 2, Mr. Griffiths, 77 pts.; 3, W. R. Sherwin (Red), 76 pts. Danio, Barbora, Misonow: 1, R. J. Thorne (R. Borapetteria), 81 pts.; 2, Mr. Chapman (Pearl), 80 pts.; 3, D. V. Jones (Zebra), 78 pts.; 4, L. W. Jordan (R. Trilineatus), 77 pts. Barb: 1, Mrs. N. Jordan (B. Semifasciatus), 86 pts.; 2, R. J. Thorne (Rose Barb), 84 pts.; 3, F. D. Hall (Cherry Barb), 82 pts.; 4, C. E. Pike (Cherry Barb), 82 pts. Corydoras Cichlid: 1, T. J. Summers (C. Julia), 84 pts.; 2, C. E. Pike (C. Cervato), 83 pts.; 3, W. R. Sherwin (C. Amaris), 81 pts.; 4, B. Pearson (C. Palenosa), 80 pts. Dwarf Cichlid: 1, E. Sheppard (Haplochromis Wagati), 85 pts.; 2, M. A. Carter (Bantam), 83 pts.; 3, E. Sheppard (Nimbochromis Kribia), 82 pts.; 4, R. J. Thorne, A. P. Prentiss, 80 pts. D.V. Cichlid: 1, D. Cowan (Oscar), 83 pts.; 2, Mrs. V. Pike (Pestivirus), 80 pts.; 3, C. Beavis (Blue Oscar), 75 pts.; 4, Mrs. L. J. Thorne (Blue Oscar), 72 pts. A.O.V. Catfish: 1, G. B. Greenhill (Rosa Lucas Banded), 82 pts.; 2, Mr. Pratt (Catfish), 80 pts.; 3, C. Beavis (B. Strigatus), 79 pts.; 4, Master C. Walker (Kuhli Loach), 78 pts. A.O.V. Tropical: 1, P. Giger (Labeo Bicoloratus), 83 pts.; 2, B. H. Field (Jerdonia Floridae), 84 pts.; 3, B. Pearson (Glass Fish), 83 pts.; 4, P. Giger (Labeo Bicoloratus), 80 pts. The F.B.A.S. Plaque for Breeder's Livebearers:—Mr. R. S. C. Wingrove (Green Swords), Breeder's Livebearers: 1, R. S. C. Wingrove (Green Swords), 83 pts.; 2, B. G. Cox (Black Mollie), 81 pts.; 3, P. H. Halliwell (Moon Plaque), 78 pts.; 4, Mr. Chadwick (Red Eye Swords), 77 pts. The High Wycombe Aquarist Society 1967 Committee Challenge Shield for Breeder's Egglayers: Mr. R. G. Thomas (Jewel Cichlid), Breeder's Egglayers: 1, B. G. Thomas (Jewel Cichlid), 82 pts.; 2, P. Giger (Barbus Dignipinna), 80 pts.; 3, C. E. Pike (Angel), 79 pts.; 4, Mr. Frost (Moonlight Gourami), 78 pts. The Penguin

Trophy for Breeder's Pair:—Mr. H. Pratt (Half Banded Barb), Breeder's Pair: 1, Mr. Pratt (Half Banded Barb), 80 pts.; 2, D. V. Jones (Pteronotus Kribia), 80 pts.; 3, C. E. Pike (Angel), 85 pts.; 4, Mr. Hatcher (Egyptian Mouthbrooder), 83 pts.

GOLDFISH

The Ann Seed Rose Bowl for the best goldfish species: R. Byrton (Common Goldfish), Common Goldfish, and London Shubunkin: 1 and 2, Mr. Byrton (Common Goldfish), 77 pts. and 76 pts.; 3, D. V. Jones (Common Goldfish), 72 pts.; 4, R. Byrton (Common Goldfish), 65 pts. Singlefin (Branio Stubbekin): 1, C. Beavis, 72 pts.; 2, Mrs. A. Sand, 67 pts.; 3, Miss M. Shrewton, 65 pts.; 4, C. Beavis, 63 pts. A.O.V. Coldwater Fish: 1, W. R. Sherwin (Chan Bass), 2, Mrs. A. Sand (Red Carp), 3, Mr. Platt (Ball Head), 4, Mrs. A. Sand (Red Carp). Breeder's Class: 1, 3 and 4, Mrs. A. Sand, 78, 75, 70 and 67 pts. Furnished Aquaria Club Tropical: 1, High Wycombe, 86 pts.; 2, South Bucks, 82 pts.; 3, Reading, 78 pts. Club-Goldfish: 1, High Wycombe, 82 pts.; 2, High Wycombe, 77 pts. Individual Trophy: 1, Mrs. P. Byrton, Individual Coldwater: 1, Mrs. P. Byrton, 4-4* Furnished Jar: 1, Mrs. G. Cowan, 82 pts.; 2, Mrs. V. A. Halliwell, 80 pts.; 3, Master C. Walker, 78 pts.; 4, Mrs. N. Jordan, 77 pts. The British Furnished Aquaria Championship: Mrs. P. Byrton, The Turner Trophy for the highest pointed fish of a Wycombe Aquarist Society member: Mr. P. H. Halliwell, Thick Lip Gourami, 83 pts.

THE August meeting of the Bradford and District A.S. took on the form of an open question—come discussion evening. The experts answering the questions were Mr. Goodison, Mr. Firth and Mr. Fletcher. This meeting was a success in the fact that only down to earth fishkeeping queries were discussed, queries which are not dealt with when the speaker is dealing with a specialised subject. Table Show Results at this meeting were as follows: Cathfish and Loach: 1, P. Moorhouse (Cory Acan), 2, A. Firth (Cory Acan), 3, A. Firth (Cory Julia), A.O.V.: 1, Mr. Kennedy (Red Tail Black Shark), 2, Mrs. Beghera (Hammer), 3, Mr. Kennedy (Green Mollie). The classes were judged by Mr. C. Holdsworth.

A TAPED lecture by Mr. Whiston on "White Spot" was held for the July meeting of the Nottingham and District A.S. The lecture gave a complete outline of Ichthyophthirius multifiliis, the microscopic parasite that causes the well known disease, white spot, in aquarium fish. Table Show results: Anabantidae: 1 and 3, Mrs. Bullock; 2, Mr. Haddleton.

THERE were 87 members present at the September meeting of the Alreborough and District A.S. Entertainment for the evening was an Auction, when fish, plants and various items of equipment were on sale. It was announced that Alreborough members had visited the Open Show held by Seafham Harbour Aquarist Society and had been presented with an award for the club gaining the highest number of points with its exhibits. Also Ald. W. Hudson had very kindly presented an Award Cup to Alreborough for their own Open Show. The usual Table Show was held with the following results:—Novice: 1 and 2, Mr. Naylor; 3, Mr. Cary. Specified: 1 and 3, Mr. P. Ineson; 2, Mr. Whitley, A.O.V.: 1, Mr. Luter; 2, Mr. Whitley; 3, Master D. Lacey.

THE following results have been received from Rugby and District A.S. Livebearers Pair: 1, A. V. Woodcock (Tuxedo Platy), 74 pts.; 2, Master R. Malin (Guppies), 77 pts.; 3, Master R. Malin (Lava Vivans), 76 pts.; 4, Miss C. Bonham (Lys-sal Molly), 74 pts. Egglayers Pair: 1, A. C. Webb (Bryostoma Albolineatus), 78 pts.; 2, N. Howes (B. Nigrolimitatus), 77 pts.; 3, B. Grant (B. Harcourtii), 75 pts.; 4, R. V. Woodburn (Cardinal Tetra), 74 pts. Fish of the Month—Cathfish: 1, B. V. Woodburn (Synodontis Robbiana), 81 pts.; 2, R. V. Woodburn (Shiba Species)

71 pts. Juniors Livebearers: 1, Miss C. Bonham (Red Swordtail male), 70 pts.; 2, Master R. Malin (Saffin Molly), 65 pts.; 3, Miss C. Bonham (Red Swordtail female), 64 pts.; 4, Master R. Malin (Black Molly), 63 pts.

THE first meeting in August of the Hull A.S. was devoted to the preparation of exhibition stands at the Hull Show. The standard of furnished tanks was the best ever put on by the Society and the public interest was magnificent.

The Open Show on the Saturday had stream classes and the results were as follows: Care and Loach: 1, P. Reynolds (Swillington); 2, Master E. Rowley (Hall); 3, A. Douglas (Hall). Guppies: 1, W. Hall (Hall); 2, G. Saffler (Hall); 3, A. Douglas (Hall). Livebearers ex Guppies: 1, B. Middleton (Douglas); 2, P. Reynolds (Swillington); 3, Mrs. E. Chapman (Hall). Barbora, Danio and Misonow: 1, W. Hall (Hall); 2, P. Reynolds (Swillington); 3, R. Bost (Smith). Barb: 1, A. Douglas (Hall); 2, J. Mitchell (Hall); 3, R. Bost (Smith). Large Cichlid: 1, A. Peacock (Hall); 2, Master W. Moss (Hall). Dwarf Cichlid: 1 and 3, T. Colthrop (Hall); 2, P. Reynolds (Swillington). Characin: 1 and 3, Mr. W. Hartman (Smith); 2, Mr. A. Whitley (Tadcaster). Fishers: 1 and 2, Mr. A. Whitley (Tadcaster); 3, Mr. R. L. Greenhill (Tadcaster). Anabantidae: 1 and 5, Mr. A. Whitley (Tadcaster); 2, Mrs. M. Lee (Hall). Breeder's Livebearers: 1, L. Greenhill (Tadcaster); 2, Mrs. M. Lee (Hall); 3, Mr. R. Poole (Hall); 4, Mr. R. Poole (Hall); 5, Mr. A. Sawyer (Hall, Ind.). 3, Master E. Rowley (Hall). Tadpoles: 1, Mr. L. Greenhill (Tadcaster); 2, Mr. P. Rimmer (Hall, Ind.); 3, Mr. W. Hall (Hall). A.S.N.: 1, Mr. P. Reynolds (Swillington); 2, Mr. R. Bost (Smith); 3, Mr. A. Whitley (Tadcaster). Furnished Jar: Mr. Vint and Master M. Douglas (Hall). At the second meeting there was a slide show and tape about Kribia, and Mr. Holby gave an interesting talk on these fish with the help of the slides.

SECRETARY CHANGE

South Park Aquatic Study Society: Mr. P. G. Glynn, 61 Blandford Road, Tooting, London, S.W.17. Tel.: 872 0485.

AQUARISTS' CALENDAR

1st October: Haywood and District A.S. Open Show at Labour Club, Bridge Street (opposite Seven Stars), Heywood, Lancs.
7th October: Mid-Herts. A.S. Open Show at The Pudding Hall, Victoria Street, St. Albans. Show Schedule available from J. L. Cooper, 22 Pondfield Crescent, St. Albans, Herts.
7th October: East London Aquarist and Pondkeepers' Association Annual Open Show. Show Schedules available from Mr. G. Green, 79 Barron Avenue, Rush Green Road, Romford, Essex.
14th-15th October: Cambridge and District A.S. Ann Invitation Show, St. Matthew's Hall, North St., Cambridge.
21st October: Goldfish Society of Great Britain Open Convention, Chelsea Community Centre. Schedules can be obtained from Mrs. P. Whittington, The Grange Coach House, Bonchurst Road, Hurley, Surrey.
26th-28th October: British Aquarists' Festival, Belle Vue Zoological Gardens, Manchester. Details from Mr. G. W. Cooke, Spring Grove, Field Hill, Bury, Yorks.
12th November: N.E.L. Aquarium Society. Secretary, Mr. R. Watt, 99 Warwick, East Kilbride.
18th November: Devonshire and District A.S. Third Annual Open Show in the Further Education Centre, Park Road, Bletch, Devon, Hon. Secretary, 73 Fawcay Lane, Thornhill, Devonshire.
25th November: Fur, Feather and Aquaria Show organized by the Borough Council of the London Borough of Hackney, King's Hall, Lower Capton Road, E.5.
26th November: Leeds and District A.S. Open Day Show.
3rd December: Alreborough & District A.S. Annual Open Show.



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