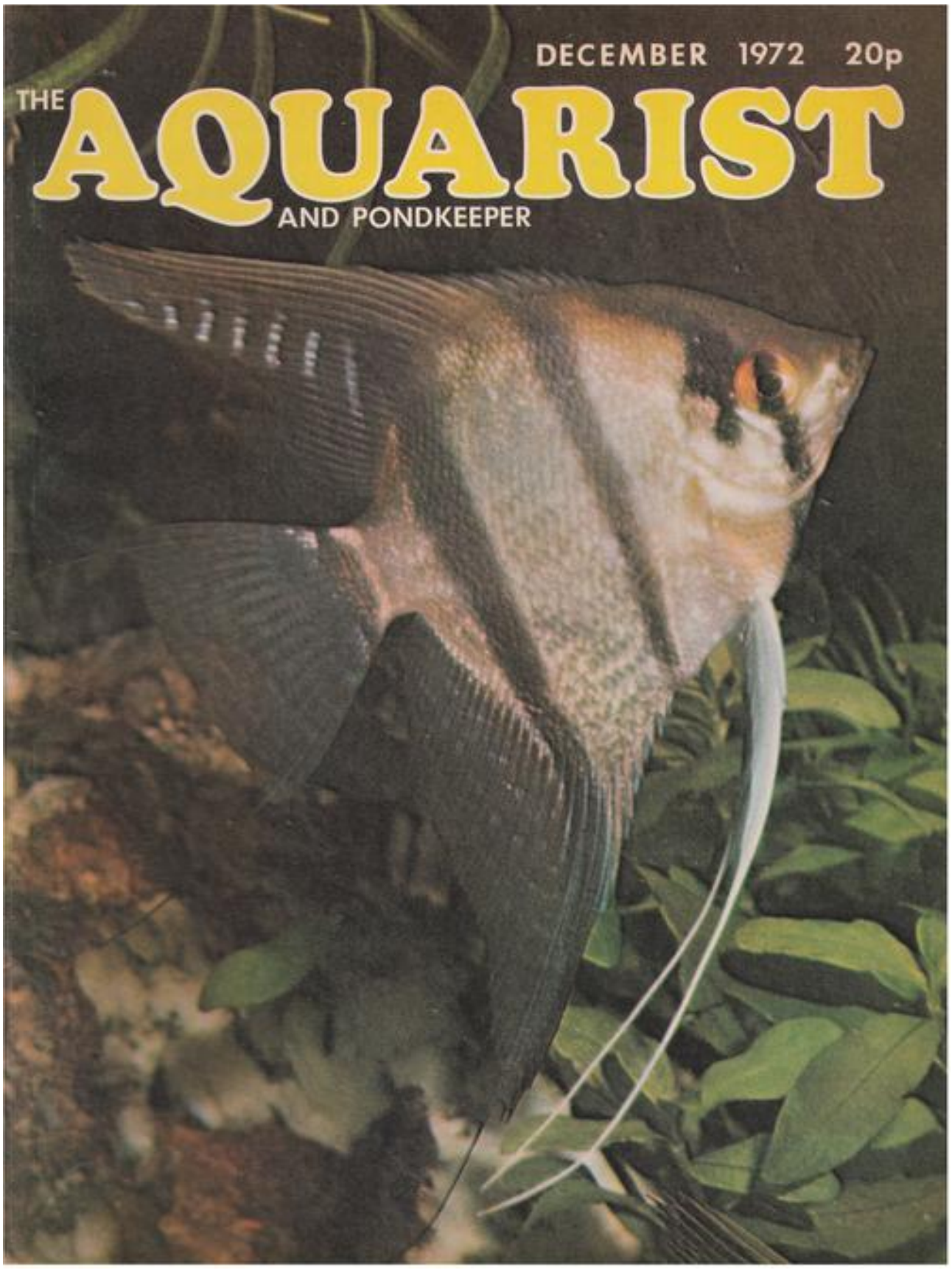
DECEMBER 1972 20p

THE AQUARIST AND PONDKEEPER



THE AQUARIST AND PONDKEEPER

Published Monthly 20p

Printed by Buckley Press,
The Butts, Half Acre,
Brentford, Middlesex.
Telephone: 01-568 8441

Subscription Rates:
The Aquarist will be sent post free for one year to any address for £3·06. Half-yearly £1·53

MSS, or prints unaccompanied by a stamped addressed envelope cannot be returned and no responsibility is accepted for contributions submitted.

Founded 1924
as "The Amateur Aquarist"
Vol. XXXVII No. 9, 1972

Editor: Laurence E. Perkins
Advertisement Manager:
J. E. Young

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The Editor accepts no responsibility for views expressed by contributors.

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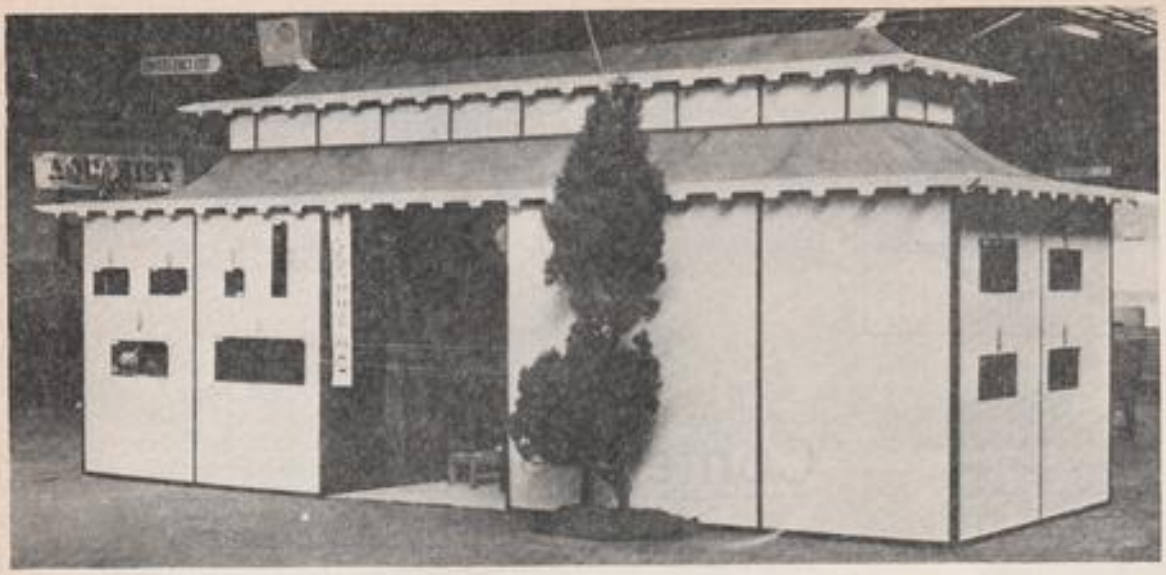


Belle Vue Aquarist Society's Stand which won 1st prize

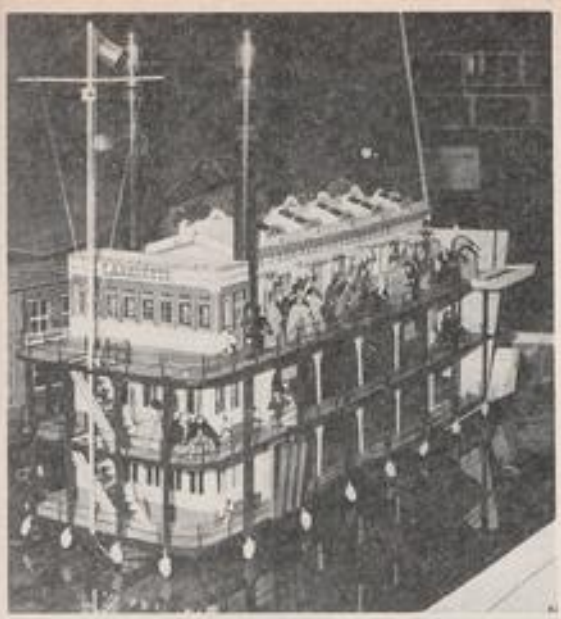
THE 21st BRITISH AQUARISTS' FESTIVAL

by A. Boarder

The exhibition was held at Belle Vue, Manchester, on 14th and 15th October, 1972. Being the occasion of the 21st anniversary, it was hoped for an exceptional show. All hopes were justified as this was the finest show of all. Over the years it has been my privilege to write a few notes on this exhibition, but by now I seem to have exhausted all the glowing adjectives in my command. When one realises that there were no fewer than thirty-three Societies competing with their stands it may be possible to visualise what an attraction they provided. Those aquarists who were not fortunate to be able to pay a visit may like to have a brief report on some of the leading stands.

Over the years there have been some very fine stands and I, together with Mr. J. Butler, of the *Aquarist and Pondkeeper*, have had the pleasure of judging them. We have always found two or three of exceptional quality, but this year was the most difficult to judge, the reason being that there were so many which were deserving of a major prize. It soon became apparent that we had to look for a fault or two in order to pick out those good ones which were not in the first four. Such apparently small faults as a badly fitting curtain at the side or a partially filled tank, were enough to lose points for a stand.

The first prize went to Belle Vue A.S., with a beautifully constructed Japanese bungalow, complete with room inside, furnished with the traditional low table, etc. One of the striking innovations was the placing of an oval wooden plaque with what looked like perpendicular Japanese writing, but it was actually the name of the fish in the tank below. The second prize was awarded to Basingstoke A.S., for a splendid panorama of a Mississippi river boat with the hotel on the river-side and a beautiful model of a river boat complete with a moving rear paddle wheel and many people on the various decks. This must have entailed considerable work and I congratulate the Society for making such a brave show so far from home.



Part of the Basingstoke A.S.'s stand

The third prize went to Northwich and D.A.S., for a very fine model of a drilling rig. This was quite large and showed the drill working continuously and there were two large cranes and a landing platform together with a helicopter. A grand effort which in most years would have won first prize. The fourth prize was given to Middleton and D.A.S., for a particularly neat stand which was a pretty half-timbered cottage with a display window (latticed of course), showing trinkets, etc., a veritable curiosity shop.

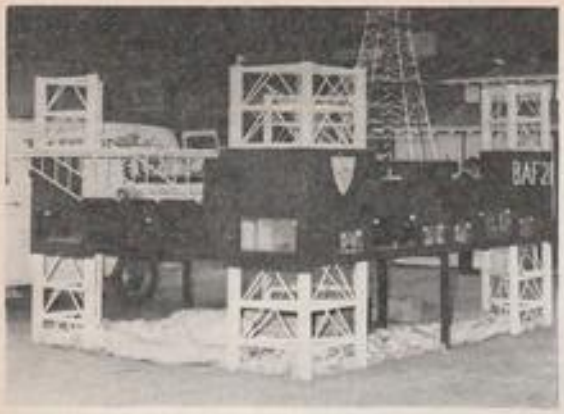
Hyde A.S., had a stand with their tanks, which was a model of a bus, and very good it was. Sheffield also had a fine stand showing a Red Indian in a canoe about to shoot the rapids, but I thought the canoe so high that it might have been shooting Niagara falls instead of rapids. Four or five feet less in height would have looked much more realistic. Also there was too much water being spilled on the surrounding floor for the comfort of many people. Stretford and D.A.S. had made a boxing ring with two large "Fighters" (fishes), circling in the ring, but again the ring was rather too high up. Oldham and D.A.S. had constructed a very fine Bathyscope on the seabed, surrounded by the usual impedimenta. Ashton-under-Lyne A.S. had constructed a greenhouse with plants and their tanks. Loyne A.S. had a stand like a large brown paper parcel with various stamps, and franking devices from all over the place; quite a novelty. Osram A.S. had constructed a round summer house with larch poles, etc., very realistic. Worksop A. and Z.S. were inspired by the Common Market and had a full-sized greengrocer's shop filled with various vegetables and fruit which would have done credit to a harvest festival.

Even Scotland was present with a fine stand by the Edinburgh A. and P.S. in the form of a Punch and Judy show on the sands; whilst both Salford City A.F. and Huddersfield showed a portion of a sitting room with tanks each side of a fireplace. Altogether the stands did great credit to the competing Societies and whilst congratulating all who entered I must commisserate with those who did not win and would point out that without all their co-operation the show would not have been the great success it was.

I need not dwell on the various fishes as they comprised the usual species seen at large shows. The tropicals were in the majority as usual but there were many good coldwater specimens with the common goldfish outstanding as in previous years. The best fish in the show was a Sail Fin Mollie, and although in splendid condition, I feel that it could have been beaten for size as I remember while judging at Nottingham Show on 11th September, 1965, seeing a grand team of these fish which were at least half as large again as the winner at Belle Vue.

The Champion of Champions had over forty fishes entered and it was apparent that the big fishes had won the prizes once more, although I can remember seeing at least one little fish a winner. The first prize went to a Lemon Fin Barb, and I am not sticking my neck out to name it in Latin, as I have

4th. Award-winning stand by Middleton & D.A.S.



The drilling rig by Northwich & D.A.S. which won 3rd prize

heard too many experts giving various names already. The second was a *Tilapia mariae* and the third a *Distochodus sexfasciatus*. All three were large fishes which I hope did not give non-aquarist visitors the impression that these were the sort of fishes to keep in their dining-room tanks.

The many trophies and awards were presented by the retiring President, Dr. J. Wilkinson, and the occasion was used to make a presentation of a gold pen to the Doctor for his dedicated work for the hobby over many years. A similar gift was made to Mr. G. Cooke, the show secretary for many years. Both were given an ovation by the many visitors near the stand.

I was rather disappointed by the lack of marine fishes, as with the apparent increase in the interest shown in this branch of the hobby, I would have expected to see many more marine fishes, both cold and tropical. The dealers' stands were more numerous than ever and thousands of fishes were on offer for sale and all the requisites for the aquarist could be obtained. The thousands of visitors from many lands must have been impressed by what is described by many people as the finest show in the world. And to think that all this might never have happened if it had not been for Mr. J. Butler, who, in early 1951, decided that London had for too long been the centre of the big shows and decided that it was high time the north had its share. A glance at the map convinced him that Manchester, with so many large towns near, was the ideal place and added to this it had splendid facilities for a show. The attractions there with plenty of parking space and at least three exhibition halls five hundred feet long, convinced him that Manchester was *the* place for a Northern show. His decision has been well justified, but this member of the *Aquarist* is always reticent about his share of the success of the twenty-one shows.

I was glad to see that the British Koi Keepers' Society, had put on a good show with a large pool containing some very fine specimens of Koi, ranging from silver to gold, through varying shades. Also black ones with silver markings resembling skulls. These large, highly coloured fish were a great attraction for the visitors who could be seen crowding round this stand most of the time. It appears that these fish are becoming very popular but I would like to offer a word of warning to intending purchasers. These fish can soon grow to twenty inches in length or more and so unless one had a fairly large pond, it would be unwise to try to keep them.

A bathyscope by Oldham & D.A.S.

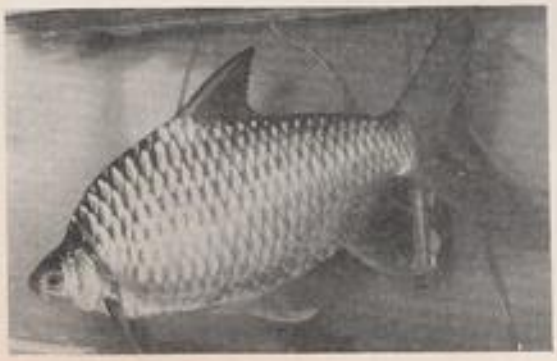
Mr. A Boarder, *left*, making a presentation to Dr. J. Wilkinson

Above: Mr. G. Cooke receiving presentation from Mr. A. Boarder

Above left: Mr. J. S. Hall of Aireborough A.S. receiving award for best fish in show for Champion of Champions

Left: Mrs. E. R. Bird of S.P.A. Discussion Group receiving award for

Below left: The Champion of Champions, A Lemon-finned Barb.



DISCUS

A PROBLEM FISH?

by Eberhard Schulze

ALTHOUGH I am not a newcomer to tropical fishkeeping I am certainly a newcomer to keeping discus. I was always fascinated by this beautiful fish but never found the courage to get involved since most of the experts make you believe that it takes a lot more to keep discus than most aquarists are willing to give. Discus became an obsession with me and I had no alternative but to try. Having made up my mind I studied all the relevant literature. Then I had to decide whether to start with a few small ones or go really mad with one of the big expensive breeding pairs. I eventually decided against an expensive pair perhaps because I was too deeply influenced by the many experts' warnings and did not want to risk such a large sum of money on a pair of fish which had really no chance to see many days. After all, everybody was only too willing to tell their sad little stories about this high-risk fish and if I had not been determined I certainly would not have taken this risk.

Eventually I found some healthy looking brown discus (*Symphysodon aequifasciata axelrodi*) in a London shop and reserved six. I was told that they were bred in the Far East and were just under 1 in. Their body colour was brownish-greyish and the nine vertical bars were clearly visible. I reckoned they were about 8-10 weeks old since their body shape was more oval than round. At this stage I had to reserve them since I was not ready with my new 40 gallons discus tank. I also could not decide whether to use gravel, rocks, plants, etc., or keep them just in a bare tank. Trying to get some guidance from the experts was no help since no two are agreed.

I compromised between to what I really wanted and what the majority of the experts advised, not because I had the well-being of my discus in mind but rather because I wanted to have as nice a tank as possible to look at. I made a background by sticking down chips of lava with silicone rubber to a sheet of black perspex. I also used these dark brown lava chips as a bottom covering since they are completely free of lime and other hardness-building substances and so will not interfere with the water chemistry.

Having sealed and cleaned the new tank I was ready to install the necessary heaters, thermostat and airstones. I also connected a Eheim filter and put in the background I had made as well as a few interesting rocks but decided to use no plants. It was certainly no show tank—no plantless tank ever can be, I believe. As I found out later, the advice of some of the experts not to use plants was wrong. I filled the tank with London tap water and since I had about 20 hours before I had to collect my Discus, I added a bottle of a well-known Blackwater Tonic which guarantees to make the water safe, even for the most delicate fish.

Next morning I made a final check before I collected my Discus. The temperature was 85°F, the general hardness 17° dGH, the carbonate of temporary hardness was 13° dKH and the pH was 8·3. (These measurements were taken with the new Tetratest Laborett which was sent to me by one of my German aquarists friends and should be available in England towards the end of the year). Because the London shop also used tap-water, I hoped that the fish would not suffer too much by being moved to a different environment, as the water would be the same.

When I returned to the shop to collect the Discus they still looked healthy and in good condition. Although I had only reserved six, I now bought the remaining two as well so that even if I was to lose three or four I still had a good chance of at least getting one pair. Since they were still rather young I decided to feed them at 3½ hourly intervals, four times a day. For the first four weeks I fed them as follows: 1. Tetra-Min Growth Food, 2. Well washed finely chopped *Tubifex*, 3. Sifted *Daphnia*, 4. Finely chopped White Worms. All these foods were taken readily except perhaps the *Daphnia* which they found difficult to catch with their small mouths.

Every night I syphoned out all uneaten food and with the help of Ehfimarin SÜ-R in my filter I was able to keep the water in good condition. After three days I started to use peat in the filter and decided to replace six gallons of water with purified water at weekly intervals and this I continued till the general hardness had dropped to 6° dGH, the carbonate or temporary

hardness to 3° dKH and the pH was 6. I kept the pH at around 6 by using peat in the filter although one can also lower the pH with phosphoric or hydrochloric acid using a few drops at a time.

At this time I also noticed that the fish were very frightened by the slightest movement in front of the tank. They tried to hide behind the rocks but would often swim hard against the glass or even hit the cover glass although there was an airspace of about three inches. I then put some plants into the tank to make them feel more at home. I used *Echinodoras martii* in some plastic flower pots, and so was able to move them around easily without disturbing the whole tank too much. They also will grow to a nice size in a high Discus tank and are probably one of the few plants which will tolerate the constant high temperature needed by the fish. I feel the plants have made all the difference and I can now go into the room without distressing the fish too much.

As a preventive medicine I use Sulafit every 3-4 weeks. So far only one Discus has died and that within the first week. The remaining seven are all healthy and have grown to a fair size and I hope to be able to report at not a too distant future that they have paired off.

Now I feed them three times a day with either *Tubifex*, Oxheart or White Worms and I do not think that they need any more care than many of the other tropical fish.

I feel that one possible reason why so many Discus die shortly after being put into the hobbyist's tank and so are wrongly labelled a delicate or problem fish, might be that the water condition is too different.

With good feeding, weekly water change—tapwater mixed with purified water to the desired hardness—good filtration and aeration and the use of a preventive medicine, you can also prove that you are not just keeping your Discus alive but are encouraging them to grow to healthy adult specimens of one of the most attractive varieties of tropical fish.

SPAWNING *Colisa labiosa*

by C. E. Lawton

THE thick-lip gourami is a peaceful, attractive little fish originating from Burma. It will accept most foods and appears to do best at a temperature of 78-82/F.

The pair that I bred from were about 12 months old and were kept in a heavily planted, 20-gallon tank along with various other gouramies. When I observed the male deepening his colour to almost black, with a beautiful gold edge to his fins, and the female fairly bulging with eggs, I transferred them to a 48 × 15 × 12 in. tank. This had a depth of 6 ins. of aged water and was bare except for a clump of hornwort in one corner to provide refuge for the female (the ph. and hardness were not noted).

The fish examined the tank for a while and then the male began to build a nest; he kept the female firmly away during this time and, contrary to reports in some books, he blew the nest from his mouth and not backwards through the gills, incorporating pieces of plant into it. After a further 8 hours he began to coax the female under the nest which was at this time 5 ins. in diameter and about an inch high.

The pair embraced under the nest a little hesitantly at first and then the eggs began to flow, approximately 10-20 per embrace. After each embrace the female left the nest at once and swam to the other end of the tank, the male sinking tail first to the bottom of the tank, recovering to place any drifting eggs in the nest. Without any obvious signal the female returned to the nest to repeat the previous procedure, this being carried out 10-15 times over the next 2 hours.

Once the spawning had been completed the male refused to allow the female anywhere near the nest, becoming quite vicious at times. I then removed the female and left the male to tend the nest.

After 24 hours most of the eggs appeared to have hatched and I removed the male, adding mild aeration and small amounts of Liqui-fry. There appeared to be quite a large hatch and this, being usual for this type of fish, was the reason for using such a large tank. I gradually increased the depth to 15 ins. adding ever increasing amounts of food, I supplemented the Liqui-fry with hard-boiled yolk of an egg. A large piece of this was placed in a jar of tank-water and vigorously shaken until all the egg had dissolved and then small amounts were given.

After two weeks I increased the food size and began using Tetramin baby egglayer. Now, 5 weeks later, the fry are ½ inch long and number approximately 280.

One problem with using such a large tank is that very large amounts of food have to be used, but I think it is worth the trouble as the extra space and depth must serve to increase growth rate.

THE FRESHWATER FISHES OF THE SOLOMON ISLANDS (Part 3)

by W. Noel Grey

16. *Oostethus manadensis* (*Bleeker*), the Menado Pipefish. D. 35-42. A. 3-4. P. 16-20. Ventrals absent.

This is the second largest of the Pipefishes found and, as with the Short-Tailed Pipefish, it has a relatively long snout. With this species, however, when comparing the snout to the complete head, we find that is only just over half the length. The tail measures three-sevenths of the complete fish.

Without these measurements it is difficult to differentiate between the two species, unless it is possible to compare a specimen of each at the same time. The colours of both are very similar as are the brood pouches. However, the Menado Pipefish has a row or band of dark spots running along the snout. The caudal fin when extended is seen to be diamond shaped.

Only one specimen has so far been caught and this was from a clear, flowing, cool water stream inside the bush with therefore plenty of shade and overhanging vegetation.

The feeding habits are similar to those of other Pipefishes, i.e. they like brine shrimp and crayfish eggs, but not larger foods.

Caught with Spotted Flagtail and Banded Pipefish.

17. *Bombonia spicifer* (*Ruppell*), the Banded Freshwater Pipefish. D. 25-31. A. 2-3. P. 14-18. Ventrals absent.

This is probably the most common of the Pipefishes found here. Smaller than those described above, it attains a length of about 13 cms. The snout is slightly longer than the postorbital part of the head but in this fish it is definitely upturned, i.e. concave. The tail is approximately two-thirds the length of the complete fish.

The colour is grey-brown to green with the sides a deeper colour than the top or below. There are lighter coloured bands running crosswise through the darker sides but the positioning of them seems to vary with the individual fish. There are small black marks on the head. The brood pouch is made up of skin folds.

Found in most of the smaller flowing streams and extending into estuaries where there is plenty of vegetation.

Feeding is similar to other pipefishes.

Caught with Spotted Flagtail, Glassfish, Toadfish, Crescent Perch and Silver Grunter.

18. *Bombonia djarong* (*Bleeker*), the Reticulated Freshwater Pipefish. D. 23-29. A. 2-3. P. 13-16. Ventrals absent.

Similar in size to Bombonia spicifer. The snout is concave and this time the eye is in the centre of the head. The tail is over half the length of the fish. The brood pouch is made up of bony plates and skin flaps The caudal fin when extended is rounded.

Colourwise the fish is brownish with reticulated darker brown and there are spots on the tail. There are three dark lines on the opeculum radiating from the eye.

Caught in flowing rivers and stagnant estuaries with Scats, Glassfish, Toadfish, Spotted Flagtail, Snakehead Gudgeon and other Pipefishes.

19. *Doryichthys retzi* (*Bleeker*), the Ragged-tail Pipefish. D. 34-40. A. 3-4. P. 16-19. Ventrals absent.

This is the smallest of those Pipefishes caught. The snout is again concave but is less than half the length of the head. The tail is over half the length of the fish. The brood pouch is composed of wide bony plates. The rays of the caudal fin project by differing amounts from the connecting membranes.

Apparently variable in colour, ranging from brown to green. The sides are normally darker than above and below.

Caught in running or stagnant water with Crescent Perch, Toadfish, Hump-Backed Cardinal fish, Scats and other Pipefishes.

20. *Rhynchorhamphus georgi* (*Valenciennes*), the Long-Billed Garfish. D. ii, 11-15. A. ii, 12-13. P. i, 9-10.

The Garfish and Halfbeaks are a school fish inhabiting estuaries and some species live permanently in fresh water. They are a surface fish and are capable of leaping above water in a similar way to the flying fish. They are herbivorous, living on small pieces of vegetation including green algae. Apparently the sensitive fringe to the beak is used to detect the small foods.

They breed mainly in lagoons and shallow estuaries, laying large adhesive eggs which stick to the plants with sticky threads. In the juvenile stage the upper and lower jaws are the same length, but with age the lower jaw lengthens beyond the upper.

These fish are used as a food and the flesh is quite delicate. There are, however, numerous bones and care should be taken when eating them.

Caught with Crescent Perch, Glassfish, Toadfish and Silver Grunter.

21. *Chanos chanos* (*Forskal*), the Milkfish or Salmon-Herring. D. 13-17. A. 9-11. P. 16-17. V. 11-12.

This is one of the fish that was taken from Lauvi Lagoon where it is caught for food. Although very bony it has soft flesh and good taste. Those specimens taken from salt water apparently have a better flavour than those from fresh water.

Colourwise they are olive-green along the back changing to silver below. The anal fin and caudal fin both have dark edges.

Not really a fish suitable for aquaria due to its large size, 1·2 metres, although juveniles are quite attractive. They are vegetarian by nature but will accept dried food quite readily.

Caught with Tarpon, Flag-Tailed Grunter, Horse Mackerel, Mangrove Jack and Giant Long-Finned Eel.

Indigenous name: Malotu.

22. *Caranx ignoblis* (*Forskal*), the Horse Mackerel or Lowly Trevally. D. I; VIII, I, 18-21. A. II; I, 15-17. P. i, 18-20.

Another fish caught in Lauvi Lagoon, the Lowly Trevally is an important food fish for those people living in the nearby villages.

They are a plain fish being grey-green above changing to silver below. The fins are blackish except the anal which is white at the edges. The caudal is long and deeply forked.

Until recently these fish were caught with hand lines or spears but last year tangle/gillnets were introduced. The average size of the fish caught is apparently 15-20 lbs. It has been suggested that commercial fishing be started in the lagoon but if this is carried out great care must be taken not to over-fish.

A carnivorous fish, apparently preferring hermit crabs and similar crustacea, but accepts fresh fish. Not a recognised aquarium fish due to its large size, but juveniles do well when kept with other fish of similar size and temperament.

Caught with Flag-Tailed Grunter, Milk Fish, Tarpon, Mangrove Jack and Giant Long-Finned Eel.

Indigenous name: Macholu.

23. *Megalops cyrpinoides* (*Broussonet*), the Tarpon or Ox-Eye Herring. D. 17-20. A. 24-31. V. 10-11.

Another food fish caught in Lauvi Lagoon. The flesh is rather tough and there are numerous small bones. Not regarded as such a delicacy as the others. Very strong and enduring and if caught on rod and line provides excellent sport.

Colourwise it is olive-green above changing to silvery below with yellowish fins. The last ray of the dorsal is extended as a free filament which may reach as far as the caudal base.

Caught with Flag-Tailed Grunter, Milkfish, Horse Mackerel, Mangrove Jack and Giant Long-Finned Eel.

Indigenous name: Senge.

24. *Lutjanus argentimaculatus* (*Forskal*), the Mangrove Jack. D. X, 13-14. A. III, 8-9. P. ii, 14-15.

The Lutjanidae family are perch-like fishes living in salt, fresh or brackish water. They are active and predaceous and subsist mainly on small fish and crustacea.

Most of them are highly coloured, being rich in reds and yellows. They afford good sport for rod and line and the flesh has a good flavour.

The Mangrove Jack is red-brown to pinkish, darker above than below. There is a wavy blue line on the head, just below the eye. The scales have dark spots sometimes forming longitudinal lines.

As the common name suggests, this fish is often found amongst mangroves, but always prefers sheltered waters and enters fresh water.

Juveniles are suitable for aquaria if kept with fish of similar size and habits. Prefers fresh fish and small hermit crabs but will accept dried foods.

Caught with Milkfish, Tarpon, Horse Mackerel, Flag-Tailed Grunter, and Giant Long-Finned Eel.

Indigenous name: Handolave.

25. *Anguila marmorata* (*Quoy and Gaimard*), the Giant Long-Finned Eel.

The family Anguillidae, the fresh-water eels, are known mostly for their occurrence in fresh water streams many miles inland. They spend the greater part of their lives in fresh water but migrate to the sea to spawn when mature. After spawning both sexes are said to die. They are generally aggressive and often savage. Although they have no poison glands, bites may turn septic and great care should be taken when handling.

The Giant Long-Finned Eel is brownish in colour, darker above than below, with darker brown spots and marblings which increase with age. Highly prized for food although rather an acquired taste. Not a community fish as it will eat anything it can swallow. In nature is grows up to 2 metres when it can be extremely vicious.

Caught with Mangrove Jack, Milkfish, Tarpon, Flag-Tailed Grunter and Horse Mackerel.

Indigenous name: Mauvo.

26. *Ophiocara aporos* (*Bleeker*), the Snake-head Gudgeon. D. VI; I, 8-9. A. I, 10. P. 14-15. V. I, 4.

This is a fairly common fish to be found in fresh-water streams and pools, and one which grows more colourful with age. Most of those specimens caught have been juveniles, about 2-5 cms., but the two adults which were netted measured 23 cms. and 26 cms. These two are still living in the outdoor aquaria.

Breeding presumably takes place in sheltered, shallow water as this is where all juveniles have been found. None have been found in brackish water.

In juveniles the colours are mostly dusky brown with paler, mottled areas, but with age the reds and yellows become apparent. The scales along the back and sides have dusky spots but the general appearance is dusky above changing to orange-yellow below. The caudal is rounded and has yellow spots. There are two or three dark red stripes running from the eye across the operculum.

The dorsal fins, anal and ventral fins are edged with red.

There are three colour varieties recognised of which two have been found, namely var. hoedeti, which has pale ventrals and a dark longitudinal band through the body, and var. guentheri, which has dark ventrals, pale spots on the scales and spots on the anal, caudal and dorsal fins.

Keeping these fish is no problem although they do not like any salt in the water. Not a particularly good community fish as, in common with some of the cichlids, they like to keep part of the aquarium as their own territory and may get over-possessive. The larger the fish grows the more docile it apparently becomes. With juveniles, up to 10 cms., care should be taken to keep smaller fish away, but in the case of the adults there has been no such problem.

There has been no trouble with feeding as they have accepted all foods offered.

Caught with Rainbow Prigi, Spotted Flag-Tails and Pipefish.

Indigenous names: Guaree Guaree, Bia.

27. *Hypseleotris guentheri* (*Bleeker*), the Rainbow Prigi. D. VI; I, 8-9. A. I, 9-11. P. 14. V. I, 4.

Somewhat similar to the British Minnow, the body colour is yellowish-olive, darker above than below. There is a black longitudinal band, 2-3 cms. wide, from head to tail base just below the level of the spine. There is a black spot on the caudal peduncle in line with the band but separate from it. The caudal, ventral and pectoral fins are plain but the anal is dusky and the dorsals have black areas enclosing white spots. The males (?) are much more colourful than the females. The operculum has pearly highlights. In breeding condition the males go very dark around the throat, gills, anterior lower part of the body. Other normally dark parts go jet black.

A fairly common fish found in the slow moving and stagnant fresh water streams, normally inside the bush where it is cooler. An excellent community fish with no bad habits. Prefers slightly lower temperatures although breeds at about 27-28°C. The maximum size is apparently about 7 cms.

Caught with Snake-Head Gudgeon, Spotted Flag-Tail and Pipefish.

Indigenous name: Bulochuru.

Conclusion

Many other fishes have been found in the fresh and brackish water which have not been, as yet, identified. They include a variety of gudgeon, sleepers and gobies together with species which will be included in the report on the salt water fishes.

There has been no time to concentrate on methods of breeding as the author has tried in keep as many different species together as possible in the limited space available in order to make this report.

One feature which was immediately apparent on arrival here was the lack of fish with only the soft dorsal. This is, of course, to be expected but when one has been used to the American and African aquarium fishes for so long the difference is most noticeable.

No diseases have been encountered other than a fungus infection which attacked some specimens of the glassfish after a long journey had bruised their bodies. It was noted that when collecting Ceratophyllum demersum to put in some of the aquaria there were numerous hydra attached to the plants. This has not occurred with other plants even though some have been taken from similar environments.

Many, or most, of the brackish water fishes of course prefer to have varying amounts of salt in the water. The main purpose of the author keeping specimens in fresh water was to see how long it takes to acclimatise the fishes when taken direct from their natural habitat and how long they would survive in fresh water. A good example which occurred naturally was at Lauvi Lagoon and from the sizes of some of the fish caught it was obvious that they had been living in the lagoon for a number of years. Also using this as an example, it has been found that some of the recognised salt water fishes are able to live in fresh water, although they normally tend to lose their brilliance of colour.

OUR READERS WRITE

Living Rock

Having read the excellent section on Marine queries by Mr. G. Cox, in the October *Aquarist*, I was most disappointed to find no mention of a third (and in my opinion the best) method of maturing a simple U/G filtered marine aquarium.

At present I have two marine aquariums; my original tank, 30 gallons, matured as mentioned by Mr. Cox with two small Damsel fish. My second tank, 20 gallons, coral sand on U/G filter matured over four weeks with £4 worth (2 lbs.) of living rock.

The inmates of the living rock, plus the fine filtration of the coral sand achieving an untraumatic maturation of the tank.

The great bonus of the living rock method is that there is no need to treat with Cuprazin or other oodinium treatment. One also has a good chance to observe all the denizens of the living rock, plankton, worms, etc., and thus to understand it a little. Most of this life survives the nitrite period due to consistent low readings which is understandable if one thinks about it.

After four weeks the fish and/or slow invertebrate can be added in slow stages. All taking to tank life much more happily than in the other method, due to the more natural environment; presence of plankton, small bivalves, scavenging worms, etc.

Needless to say, in a Cuprazin-oodinium treated tank one would have had to wait four to six months before adding invertebrates and even then at risk.

This living rock system has been of further great value to me in that it helped me to maintain a very small (1 in. long) *T. Fuscus*—Peacock wrasse, which was still in a delicate juvenile stage, only feeding from the fare provided by the rock specimens plus newly-hatched brine shrimp. Now he takes prawn eggs nearly from my hand and is 1½ ins. long after three months.

Yours sincerely,
Christopher Cobb,
99 Brightside Avenue,
Staines, Middlesex.

Freshwater *v.* Marine

I feel I must comment on the views expressed by your correspondent Mr. Lewis Doubleday in the September issue of *The Aquarist*.

As part of his case in converting freshwater fishkeepers to the marine side of the hobby he quotes: "How many Guppies or Neon Tetras have you lost this year?" Perhaps Mr. Doubleday asks this, based on his own record as a fishkeeper?

I have had up to 24 tanks under use at one time for breeding, rearing, etc., but I have had five show tanks set up for over 30 months and the total population loss over this time was one gourami, two leopard danios and five tetras of various species. Most of these losses can be attributed to old age and from a total population of around 250 fish I can't see these losses balancing up with some of the expensive marine species available at present.

If Mr. Doubleday was in the habit of replacing fish everytime he went "into his shop around the corner" I would suggest he was far from keeping his fish properly. In addition he states that "*A. percula* (Clown) if well looked after will have a life span of a couple of years." May I say: "So what?" Livebearers can live to this age, tetras, rasboras and loaches will live for four years or more and large cichlids can keep going strong for up to ten years.

Another point is that most freshwater species sold by aquatic stores can be bred and the young sold or bartered for feeding or equipment. So much for Mr. Doubledays' "balancing up cash wise".

Keeping freshwater tropicals is not only keeping fish either, and may also include plants, crustaceans and invertebrates.

Finally, may I conclude by saying that it would seem advisable if Mr. Doubleday learns a bit more about the freshwater hobby before making any more inaccurate observations and comparisions. If this is the way the B.M.A.A. hope to attract members from the "freshwater fraternity" I would suggest they re-think their PR activities.

Yours sincerely,
Thomas R. Cowden,
Airdrie, Scotland.

CAN YOU FIND THE TROPICALS?

By Hilary Maynard

My 1st is in NUMBER but not in NAME,
My 2nd is in CRIPPLED and also in LAME.
My 3rd is in GAMBLE but not in LOSS,
My 4th is in CANDY but not in FLOSS.
My 5th is in KNUCKLE but not in FIST,
My 6th is in MEMO but not in LIST.
My 7th is in OBLONG and also in ROUND,
My 8th is in BASKERVILLE but not in HOUND.
My 9th is in LENGTH and also in LONG,
My 10th is in SINGING but not in SONG.
My 11th is in FIREFLY but not in GNAT,
My 12th is in SURFACE but not in FLAT.
My whole like it warm, but airy as well,
If conditions are wrong—you can very soon tell!

Answer page 359

WHAT IS YOUR OPINION?

by B. Whiteside

Photographs by the Author

I WOULD LIKE to begin by wishing all my readers a very happy Christmas. I would also like to say a sincere thank you to everyone who wrote to me in 1972, and to manufacturers and suppliers who kindly supplied me with new products and books for review purposes. Your assistance has been greatly appreciated!

Now on to the first of this month's letters, and it comes from 16 years old Ken Lee, who lives at 30 Rochester Road, Northwood Hills, Middlesex, HAG 1NH. Ken writes in reply to Master G. Millman's letter (October edition) about fishes going without food during holiday periods. Master Lee had often heard "the tale" that tropical fishes can go for fourteen days without food, but he decided to use a vacation block in his 30 in. semi-community aquarium before he went on holiday. He also added two garden stones coated with a paste of flake food which had been left to dry. His fishes set about the food-covered stones as soon as they were introduced. Alas, when Master Lee returned from holiday he found that his tank, which had been full of thickly growing giant Hygrophila, had been almost stripped of plants; however, he does point out that his tank contained twenty-five fishes, including a variety of cichlids.

Before he went on holiday, Master Lee fed his fish on large quantities of *Tubifex* for a week. The tank's lights and undergravel filter were left off during the entire holiday. His advice is to forget all about the fourteen days without food, and to arrange with a trustworthy neighbour to feed the fishes daily, using appropriate portions of food which have been measured out previously and left in small twists of paper. He says that this ensures that the fishes have a varied diet, but are not over fed. Master Lee's other fishes, which included about 50 blue Gourami fry, all managed to survive on vacation blocks and "food stones". Ken Lee also informs us that he bred a "magnificent, brown, three-spot Gourami with a true-blue Gourami", and the result was a batch of grey three-spots with orange anal fins. These babies were fed on "Liquifry", hard boiled egg yolk, and minced *Tubifex*, until they were able to take flakes, and larger live foods. He asks for readers' comments on the lack of colour in the young fish.

Miss Linda Gwilliams (whose observations on the green shore crab, in the October edition, I found to be most interesting) is 15 years old, and writes from 240 Norwich Road, Costessey, Norwich, Norfolk, to tell us how she would set about converting a nylon-coated tank, used for tropicals, into a tank suitable for marines. First of all she would seal the inside of the tank with a silicone sealer—costing about 95p per tube. She would then buy a hydrometer costing about 75p, and synthetic sea salt costing about £1·00 to make 10 gallons. The cost so far would be about £2·70 for a 10 gallon tank. The same heater and thermostat could be used, as could the air pump if strong enough. Miss Gwilliams suggests that an undergravel filter is best for marines, and states that the original gravel could be used, but that crushed coral would be better. Suitable rocks and corals could be bought to decorate the tank. She finds that (freshwater) terrapins are easy to keep as long as the water is properly heated with a heater and thermostat. The terrapins should be fed on live foods such as *Tubifex*, *Daphnia* and raw meat cut into small pieces. They also require a place where they can climb out of the water. Miss Gwilliams says that the common problem with terrapins is that tropical and sub-tropical specimens are kept in cold water, and fed on packets of dried food—and subsequently die of cold and starvation.

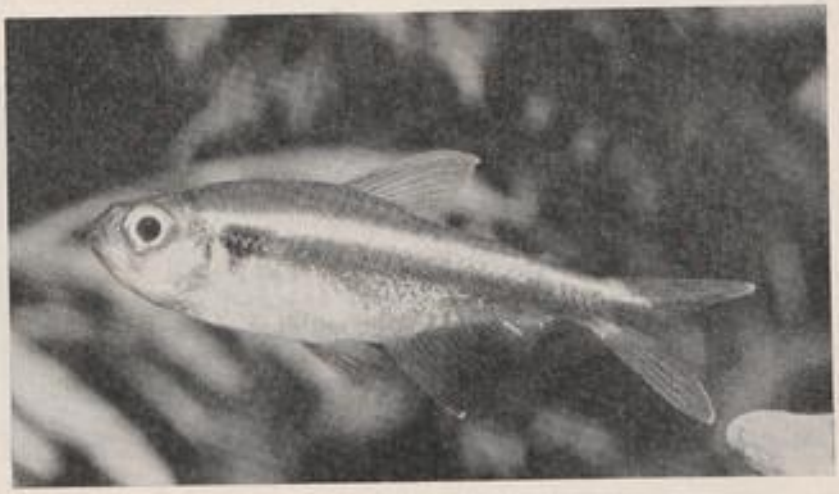
Further views on terrapins come from Mr. K. J. Baughan, whose home is at 13 Hill Ground, Frome, Somerset, and he has four elegant terrapins (*Pseudemys scripta elegans*). Each green shield on the shells is marked in black; and the creatures have a splash of orange on both sides of their head. The terrapins are about 1 in. in diameter and are kept in a 24 in. all-glass tank containing 3 in. of filtered water, kept at 76—78° F. The tank has rocks jutting out of the water for the creatures to climb on to. Mr. Baughan says that he has "split" the tank into thirds—two-thirds water and one-third gravel; the rocks are made into caves which are large enough to prevent the terrapins from getting caught in them. These "little, green beauties", as their owner calls them, like to bury themselves in the caves after they have had a good swim and a good meal. As the creatures are only hatchlings and would die if they were to hibernate, they have to be kept warm, and given good food. They are keen on *Tubifex*, small earthworms and shredded cod. Mr. Baughan's four youngsters receive a ball of *Tubifex* of about the

size of a penny, twice per day, and a piece of cod about the size of a twopence piece. He tried to keep terrapins before, but was unsuccessful. He now feels that the secret to supply them with enough heat, and constant feeding. As well as terrapins Mr. Baughan keeps two Japanese fire-bellied newts, one South African *Xenopus* toad, and four large tanks of tropical fishes. He ends his letter by thanking *The Aquarist* for all the help and advice which it has given him.

The third letter about terrapins comes from Mr. S. Hallett, of 7 Tors Road, Okehampton, Devon, and he has six different species, two of which he has managed to keep for two years. During this period the elegant terrapin has grown from a size of 1in., to about 4½ in. long by 4 in. wide, and an African side neck which has grown from 3 in. to 6 in. in length. Mr. Hallett states that the main requirements are either a very large tank and few species, so that a biosystem of waste destruction is set up naturally, or a smaller tank with either continual filtration or a daily water change. He now uses a 36 in. × 15 in. bow fronted tank, half filled with rocks for basking on, and the tank is filtered by two corner filters, each with a peat "sandwich". He finds these to be absolutely essential as they help kill bacteria and keep the water "sweet". The filters are completely changed twice per week, and the water about once per fortnight. The temperature is as for tropical fishes—about 74°F.—and a special diet is made from a mixture of fat-free minced beef, oats, yeast, bone meal and vitamins. The mixture is deep frozen and is then sliced up when required. This, together with any dead fishes and snails from the fish tanks, seems to do the trick. The most interesting species that Mr. Hallett has kept is the side neck; it is "full of beans", is friendly, and has a huge appetite—but it *must* be kept warm.

I was pleased to receive a further copy of both the Federation of British Aquatic Societies Bulletin, and "Toras Topics", the magazine of the Torbay Aquarist Society. I recently started an aquarium club for the pupils of the school in which I teach, and so far twenty keen pupils have joined the Greenland Aquarium Club. I will pass on the above two magazines to the pupils, and would be pleased to receive magazines from any other groups which would care to send them to me. I would also be pleased to receive suggestions for events or entertainments which would appeal to young members of an aquarium club. What kinds of educational entertainments do you have in your club?

The next letter comes from Mr. D. Foster, and his address is 233 Laygate, South Shields, Co. Durham. Mr. Foster feels that a fortnightly *Aquarist* would not be much of an improvement as it would still contain the same features, only we would get more of them. As Mr. Foster would like to see *The Aquarist* "go from strength to strength", he makes some suggestions as to how he thinks the magazine could be improved. He would like to see more illustrations in W.I.Y.O.? (I'll see if I can add an extra photograph or two each month if other readers agree on this point). He would like better reviews of new products, with a "test bench" to supply accurate information, and photographs to show what is being reviewed. (I'll try to take some photographs of new products which I review, but the "test bench" idea, although very sound in theory, would be rather difficult to put into practice. It is virtually impossible to give objective reviews of certain new products unless one has a fully equipped laboratory, and lots of spare time, at one's disposal. I have neither of these commodities! To evaluate, say, a new "cure", or a new fish food, one would need to have a large number of healthy and diseased fishes, in a large



number of tanks, available, so that controlled experiments could be carried out over an extended period of time. Without these being available, reviews often have to be fairly subjective—although I feel that such reviews can still be valid and useful. The next letter has some further comments on this subject). Mr. Foster would also like to see reviews of books in the cheaper price range. (If I recall correctly, most of the books which I have reviewed have been in the cheaper price range—mainly because I can't very often afford to buy more expensive books just to review them). He would also like to see a section by a top breeder, giving his views on the hobby and its future; a section for aquarists who are new to the hobby; an alphabetical dictionary giving the meaning of the most useful terms; more do-it-yourself hints—such as the one in the October edition; the magazine divided up into sections such as tropical, coldwater and marine so that readers could more easily find the section which interests them most; more details of new fishes and plants, and the conditions which suit them best, etc. Mr. Foster would like to see News from Aquarists' Societies extended rather than dropped; he feels that it could be made more interesting if details of winning fishes, plus photographs, were included, as well as interviews with their owners. He also feels that if advertising were made bigger and better more firms would contribute, and that this would help keep costs down to "a reasonable level". Mr. Foster ends by saying: "Please don't feel that I am getting at you, as nothing is further from my mind. I think this is the best magazine of its type in the country, but compared with many other hobby magazines it has something sadly lacking—which is quantity". (I would be interested to hear other readers' views, but would point out that many other hobbies have many more followers than does the aquarium hobby in the U.K. For example, we have many good gardening magazines in the U.K. because we have very many gardeners in the country. Speaking personally as an aquarist, I still find *The Aquarist* to be a most interesting and helpful magazine, which is good value for money, and I held these views for many years before I began to contribute articles to it myself).

Mr. R. Kitchen is the managing director of Northern Aquarium Products, of 11 Dudley Street, Colne, Lancashire, BB8 0QW, and he was interested in my recent comments on the lack of standards for testing new aquarium pumps. His firm will be entering this department of the industry, when it is satisfied with its new product which is still under test and will remain so for the next few months at least. However, his firm would be more than interested in a "standard" test, although it does have its own testing methods. He suggests the use of a pressure gauge, such as is used in the air movement industry at present—a weakened version of a compressor gauge with standard tubes related to power consumed on any particular device. Mr. Kitchen points out that there are drawbacks to a certain degree, as all pumps of the diaphragm type which his firm has tested have had varying degrees of power-loss after continual use for a period of time. The time period was not the same on all pumps, but power-loss did occur, nevertheless. Full power was restored by adjustment, of course. He notes that the variation between devices is startling, but without information on the wattage this is hardly surprising. He hopes that his comments will be of some help, and would be pleased to be kept informed of any agreements or discussions that take place, as standardization can only ultimately benefit the aquarist—which is what his, as a new company, will always strive to do with all its products. (Mr. Kitchen's comments on this problem are the only ones which I have received since I last wrote about it; however, I'll keep aquarists and manufacturers fully informed of any further developments which take place, through this feature. Anyone with further comments should keep me informed, please).

18 Abbey Lodge, Regents Park, London, N.W.8, is

the home of 16 years old Douglas Rose, and since last writing I have received two letters and a number of interesting coloured photographs from Douglas. The photographs, which were taken by Douglas's father, show one of his two lace plants, his very attractive community aquarium, and his most interesting "pet" fish, a red piranha. The fish was bought about six months ago, and was then only about ¾ in. in length; it cost £1·20. It is now over 4 in. in length! The red piranha was kept in a 14 in. × 8 in. × 8 in. tank, but soon had to be moved to a 24 in. tank. Douglas has now bought a new 36 in. tank for it, and it continues to grow into what he calls "a most fascinating pet". However, as Douglas has seen the needle-sharp points of the fish's teeth, he would never dare to feed it from his fingers—especially as the fish eats five small pieces of lean meat per day, and can bite these in half in a flash. The piranha also likes raw lamb's heart, and raw liver, and receives a small goldfish each Friday as a special treat. Douglas keeps the water in the fish's tank at 80°F. He says that on certain occasions the fish dashes wildly around the tank, and can be heard to jump out of the water quite hard. He asks if this is normal for the red piranha. (Do readers have any comments, please?). Like me, Douglas likes to have a jungle of plants in his community aquaria, and his plants always grow well. He has reached the conclusion that lace plants do best if they receive a proportion of natural daylight. His largest tank, in which the plants grow so well, is 39½ in. × 15 in. × 12 in., and is lit by three 40 watt bulbs for 5-6 hours per day. He does not use any plant fertilizers in his tank, but always adds "Blackwater Tonic", made by Tetra. Douglas says that it makes the water a beautiful, golden brown colour, and neon tetras are really colourful in such water. He would now never have any tanks without this tonic added. His large tank is filtered for 24 hours per day by an Eheim power filter. (No doubt Douglas will keep us informed of his piranha's progress).

Photograph shows the black neon. I'd be interested to hear of your experiences with this fish for the next edition.

Mr. P. Smith's letter is headed: 1 Merton Road, Seven Kings, Ilford, Essex, and he has recently taken up tropical fishkeeping again after a lapse of 15 years. He has found W.Y.O.? to be very helpful; and was pleasantly surprised at the improvement in the equipment available, particularly in regard to tanks. He recalls the permanent problem of rusted tanks, and has found that it can now be a thing of the past. He is also surprised to find that the price of many fishes has dropped. Fifteen years ago neons were quite beyond his means, but he now finds that most people can afford a school of neons if they so desire. Mr. Smith had a beautiful pair of *P. kribensis* which he had to return to his dealer—very reluctantly—because they liked to indulge in fin-nipping. All the books which he has read have stated that this cichlid is peaceful, and suitable for a community tank. His kribensis liked to go for the angels most of all, especially those of a dark colour, and the angels' finnage was soon reduced to a tatty mess. He wonders if any others have met with this problem. (See the next letter, Mr. Smith). Mr. Smith has a superb pair of golden sailfin mollies, and the male fish is constantly courting the female. "To see his dorsal fin erect is a sight to make even the most hardened aquarist gasp," writes Mr. Smith. He hopes to buy another tank specially to breed his sailfins in. Another fish which greatly appeals to him is the pretty tetra, and he thinks it more attractive than the beacon. Mr. Smith uses an air pump to operate two internal filters in his tank, and he finds that these keep the water "sparkling clear". He wonders why relatively expensive power filters are so popular. (I have one power filter, and a variety of other outside air-operated filters. I use the power filter on my largest tank, and find it does a better job than would an air-operated filter; it is also virtually silent, takes up little space, is inconspicuous and does not need pumps and trailing airlines, not to mention regulator valves. What are other readers' opinions?). He also asks if it is possible to raise discus to maturity in a community tank without power filtration, using internal filters, and not changing the reaction of the water which suits the other fishes. (What's your opinion? At the moment I have three discus, and a variety of other fishes, including angels, in the same large tank, and the discus seem to be quite content and feeding well. In fact, I can hardly afford to keep pace with the quantity of freeze-dried *Tubifex* which the discus and angels consume each day!). Mr. Smith also likes a thickly planted community tank, and finds water wisteria to be the easiest plant to grow and propagate. (So do I—at present!).

Mr. M. Mills lives at 45 Chelston Road, Ruislip Manor, Middlesex, and he began by setting up an 18 in. community tank, and stocking it with a stone loach, 3 small silver angels, 6 neons and 3 tiger barbs. Soon after he added a pair of kribensis. One of the tigers turned rogue, and the other two soon followed suit; he got rid of all three. Next he bought 2 black angels and 3 three quarter black guppies. One neon and the guppies were lost, and the kribensis were suspected at breeding time. A Siamese fighter which was added lost all but a ½ in. of his flowing tail, and most recently the 2 black angels and a silver angel have gone. At present the tank contains 5 red platies, 5 neons, 2 kribensis, 1 stone loach, 2 silver angels and a bristle-nosed catfish. Mr. Mills has decided to buy a tank especially for the kribensis, to let them breed in peace, but he hopes he has not blamed the kribensis wrongly for all the losses in the tank. (I don't know about the part played by the *P. kribensis*, but I would consider that the tank had rather too many fishes in it! What do others think?).

The final letter for which I have space this month comes from Mr. I. Grant, and his address is 39 Portland Road, Mitcham, Surrey. Mr. Grant comments on the letter from Mr. J. Worley, concerning discus. Mr. Grant writes: "Although Mr. Worley appears to have successfuly raised discus, I feel he has fallen short in this venture." Mr. Grant has himself raised from babies ten discus of various colours, and at twelve months they have reached a size of between 6-7 in. He attributes his success to the varied diet on which the discus have been fed: *Tubifex* worms, white worms, blood worms, mosquito *larvae*, lambs' heart, spinach and *Daphnia*. All of these foods have been accepted without hestitation. Such a varied diet is used because Mr. Grant found that, after a few days, his discus would no longer readily accept the food offered. He thought at first that the rejection of food was due to natural shyness, but later decided that a varied diet might cure the shyness. It did, and the shyness has not recurred. Mr. Grant's green female discus, and his brother-in-law's large male, have been placed in a tank and have spawned. They appear to be raising about 60 babies. At the other end of the tank another pair are nursing about 30 young. Mr. Grant says that the credit for this success goes only to his brother-in-law, Mr. G. Middleton.

As I still have a large number of letters unused this month, I'll not pose as many problems as usual; however, as it's Christmas, I've decided to award a prize for what I consider to be the most original and useful tip which a reader sends me for inclusion in the February, 1973, edition. I'll not say at this stage what the prize will be, but it should be with the winner in time for Christmas—if his or her tip reaches me in the earlier part of *this* month. Please also let me have your comments on the following: (a) Photograph 2 shows a cute, little albino *Corydoras* which belongs to my uncle, Mr. Clifford Perry, Senior. What have been your experiences with the keeping and/or breeding of *Corydoras* species? (b) On what foods do you feed your marine fishes? (c) Under which conditions have you successfully bred white cloud mountain minnows? (d) Do you supply your aquarium plants with any extra "food"? If so, what, and how? I look forward to your views on the above, and on the problems posed in the main body of the text. Do please *print* your name and address on letters, and enclose a S.A.E. if you require a reply. Good-bye until next month—and I'll be looking out for those tips!

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to all our readers everywhere

A Very Merry Christmas

and

A Happy New Year

THE BLACK-LINE TETRA

by Jack Hems

THE black-line tetra was introduced to tropical fish hobbyists in Europe (Germany) from Brazil in 1936. In the same year, the late Dr. Ernst Ahl, a distinguished German ichthyologist, named it *Hyphessobrycon scholzei* for science. Yet almost up to the Second World War, it was sometimes listed as "Aleta nigrans," a pseudo-scientific name said to have been bestowed upon it by some over-imaginative dealer. At the same time, it was held in some quarters that the fish had its home in Africa. So in the stormy years that led up to the outbreak of the war, tropical aquarists bought and bred (the species is one of the easiest oviparous tropicals to raise in captivity) a fish masquerading under a false name and a mistaken place of origin. The true black-line or one-line African tetra is, of course, *Nannaethiops unitaenius*. This pretty characin—it has extra colour in the form of red fins—was first made known to the professors in 1871 and to aquarists some sixty years later.

The black-line or Scholz's tetra is well suited to a community set-up in which no fishes with voluminous fins are present; for, in common with not a few other tetras, it has a tendency to snap at and tear waving or fluttering membraneous appendages as, for example, the caudal extremities of guppies.

But let's take a look at its appearance. The back is olive, the compressed though fleshy sides leaden to shiny silver reflecting greeny-blue to brassy tints, the underparts milky to ivory white. A dense black stripe, margined above and below by a thin piping of gold, extends from hte shoulders to the caudal base, where it terminates in a bold black blotch that spills over on to the forked tail-fin. The anterior rays of the anal and ventral fins are white. The other fins are almost, if not quite, colourless or, in the precise language of the zoologists, hyaline. A full-grown *H. scholzei* measures 2 in. The female is the heavier bodied of the two. But be this as it may, there is a method of sexing this fish which, though not absolutely reliable, will sometimes help the aquarist make up his mind regarding the sexual identity of what is believed to be a pair. First, the two fish are removed from the aquarium and placed in a close-meshed bag or net (wet, of course). Next, the bag or net is turned upside down over the aquarium. The first fish to drop out, that is immediately, is almost certain to be a female. Why? Because a number of the smaller characins—*H. scholzei* among them—have microscopic hooks in the anal fin of the male, and these get tangled in the fine-woven fabric.

Because the male is an ardent suitor, and chases a roe-filled female to and fro with great vigour, the tank for spawning this species should be at least 2 ft. long. It should be filled with well-matured water preferably on the acid side of the pH scale. Feathery- or bristly-foliaged plants, Java moss or warm water-grown hornwort, to name suitable species—should be weighted to the bottom.

Prior to being introduced into the tank set aside for spawning, the sexes should be isolated for about a fortnight to three weeks. During this period, they should be given their fill of rich food. As soon as the female shows fuller sides and the male a more glistening appearance, it is time to bring them together—in the breeding tank, of course. I suggest you do this last thing at night. Then, with good fortune on your side, mating will take place the following day. To begin with, the temperature of the breeding tank should be the same as the tank or tanks from which the fish have been taken, but after the fish have been set free in the breeding tank, the thermostat should be adjusted to give a slight rise in temperature.

Egg-scattering takes place during the many energetic drives. Most of the eggs—a hundred or more are scattered at spawning—come to rest in the plants, but those that don't are soon gobbled down by the keen-eyed and cannibalistic parents. To protect the eggs, then, the parents must be removed from the spawning tank as soon as spawning is over.

The eggs take two or three days to hatch out and the tiny fry hang tail-down among the plants, that is until they have absorbed their yolk sacs. Then they assume a horizontal position and swim off in all directions in search of food. Without question, the best food is fresh infusoria. Next best, flour-fine dried food or one of the proprietary liquid first foods. After about a week larger food should be given. Micro worms, micro eels, or brine shrimps are recommended. Within the space of a month the fry will reach a length of about ½ in. Maximum size will be attained in under a year.

The adult black-line tetra is always on the go and frequents the middle and lower levels of the water.

It is a schooling species and, for this reason, is well suited to sharing a tank with other schooling species of a contrasting colour such as the neon tetra or the bloodfin. It is about as hardy and as long-lived as these two species too, and can endure, temporarily, a temperature down to the middle sixties (°F) provided the fall is very gradual.

A DECORATIVE AQUARIUM FOR ANGELFISH

by P. C. Aslett

WHILE I am personally no specialist in the freshwater Angelfish, *Pterophyllum scalare* and varieties, and while I have no particular affection for this species, I have long been interested in the aesthetic possibilities of creating an environmental tank for members of this species only, which will be suitable to their requirements and artistically pleasing at the same time and entirely satisfactory as a decorative home aquarium.

Like many aquarists, I have for many years included a trio of one or other of the varieties obtainable in my community aquaria, largely for the pleasing contrast which the unique body-shape and habits of these Cichlidae create to the more "orthodox" shapes of the other popular community dwellers. While the Angels are young, and of approximate size to the now-extinct half-crown, no problem is encountered; however, given normal, favourable conditions, *Pterophyllum scalare* rapidly increases in size to resemble more nearly a standard-size teaplate than a "half-dollar" and this is the time when I feel that such specimens cease to be suitable inmates for a community tank.

It is not my intention to condemn large Angels on the basis of physical unsuitability in relation to other community dwellers; in this article I am more concerned with the aesthetic point of view. It has long been my personal contention that, with certain exceptions, a well-balanced decorative home-aquarium should contain fishes of roughly similar proportions to the container utilised (viz., "streamlined" fishes such as Tetras, most Rasboras, Danios, etc., should be assigned to long, shallow tanks: medium-deep bodied fishes such as most Barbs to proportionate tanks, i.e., 24 × 12 × 15 ins.). For adult Angels, a tank as nearly square in frontal elevation as possible being the ideal, I have based the suggestions in this article on a tank of statistics, 30 × 20 × 12 ins., a size which was at one time "standard." While no longer listed as a normal stock-sized aquarium, second-hand examples are frequently obtainable and specially made aquaria to such proportions or similar are quite easily obtainable at little extra cost. It is suggested that any similarily proportionate aquarium, viz., of height not less than two-thirds the length, would be suitable, although it is not recommended that tanks of less than 24 inches in length be utilised.

My suggestions for the furnishing and setting-up of this tank, together with a suggested planting key are as follows:

Materials

Tank: 30 × 20 × 12 ins. or proportionately similar.

Planting Medium and Rocks: ¼ to ⅛ in. screened gravel, sufficient to cover base to depth of 2½ ins. when spread evenly and flat—no "hills, valleys or slopes" desirable in this set-up. Five rocks of matching colour or large coloured pebbles, sizes variable from cricket-ball to slightly larger, viz., 3 to 6 ins. diameter.

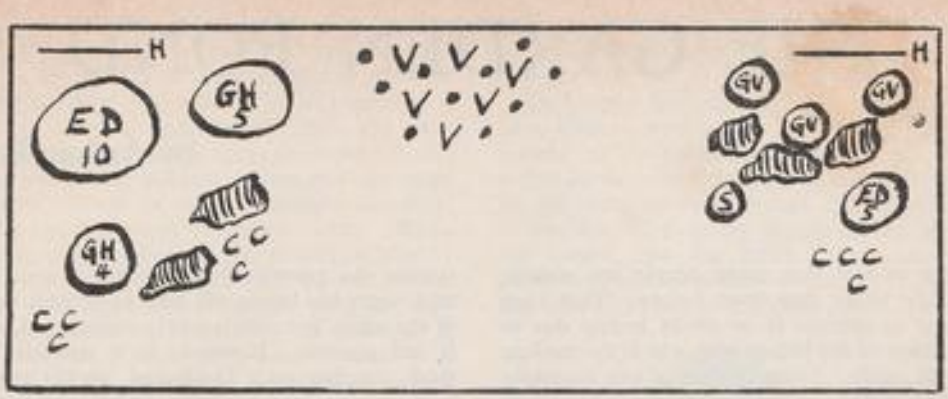
Background: External fixing, "Stratarockwork" backing paper from which irregular central portion approx. 20 × 16 ins. has been removed, the resultant aperture being then covered by pale blue paper from behind. Alternatively, a large piece of cork-bark approximately 20 × 16 ins. affixed internally against external paper; either arrangement giving a quite pleasing effect and added dimension.

Plants: Obviously, with such abnormal depth of water, plants chosen must, in the main, be extraordinary tall-growers which do not object to diffused lighting on their lower and root portions. The following selection is recommended to meet such requirements:

15 tall *Egeria densa*, 9 giant Hygrophila, 6 giant Vallis (18 to 20 ins.), 3 *Vallis gigantea* (24 to 30 ins.), 1 large Spatterdock (*Nuphar*), 6-10 medium Crypts (4 to 8 ins.), Floating Fern (*Ceratopteris*) or *Riccia* at the surface.

Additional decoration: 10 to 12 young, very thin (⅛ to ¼ in.) diameter Bamboo shoots or canes of approximately 20 ins. in length. The thinner chosen, the better and younger shoots are less glossy than older ones and more natural in appearance. If possible select those with dried leaves attached and do not remove as the effect will be enhanced by leaving them intact.

Stocking: Three specimens each (presuming the



KEY: ——H = HEATER : = ROCK.
• = BAMBOO CANES (10-12).
ED = EGERIA DENSA (15) : V = VALLISNERIA SPIRALIS (6).
GH = GIANT HYGROPHILA (9) : GV = —ı— GIGANTEA (3).
S = SPATTERDOCK (1) : C = CRYPTOCORYNE (6-10).
(NUPHAR.) (VAR. AFFINIS OR BECKETTI).

CERATOPTERIS CORNUTA OR RICCIA FLUITANS AT SURFACE.

tank to be of the specified dimensions) of any four of the following varieties:

Silver, black, marbled, blushing, golden, bi-colour, lace or veil. *N.B.*—No heating or filtration apparatus has been included in this suggested specification; it being assumed that the former will be included as a matter of course, and the latter by choice.

Setting Up

For simplicity in explanation, a suggested planting layout is appended below. It is emphasised that *small* rocks be utilised: when setting up large aquaria it is a sound general principle to employ either very large or very small rockwork; medium-sized pieces frequently fail to achieve the desired effect, and in this case the focal point being the bamboo against background and large decorative plants, the need for monolithic rockwork is obviated.

The gravel should be placed evenly over the bottom, with perhaps a slight bias towards the front glass. This arrangement lends itself ideally to undergravel filtration, if required; also, the heaters may be easily concealed in the corners. Bunch plants should be clumped in liberal numbers—the figures in the sketch suggest accordingly—and it is recommended that all planting be completed before the inclusion of bamboo and rocks (contrary to normal practice). The appearance of the bamboo will be greatly enhanced if the canes are set into the gravel at haphazard angles, interspersed with *Vallisneria*, and not placed regimentally upright. Possibly more plants than suggested may be required, particularly Cryptocorynes which are handy for blocking gaps when used in small clumps of 3 to 4 plants, but avoid excess generosity as overplanting of this layout could spoil the general effect.

Finally, a suggestion on lighting: While, as in most cases, it is a matter of trial and error, the unusual depth of this set-up may necessitate stronger than normal lighting. It is suggested that the wattage of lamps used be increased rather than the duration of artificial illumination, but care should be exercised that upperleaves and floating plants do not become scorched.

THE GARDEN POND

by Arthur Boarder

IT IS QUITE evident that more people are making garden ponds today than ever before. That they have become so popular is no doubt largely due to the introduction of the linings with which the modern pond can be made. Prior to this it was necessary for the pond-maker to use considerable energy in mixing concrete, no easy task when a medium or large sized pond was to be made. When one considers the work required to mix aggregate and cement three times dry and then three times wet, and the weight of the watered mixture, it is possible to realise how many hundredweights have to be moved. Also, in many old books on pond construction we see the complicated timber structures illustrated and it is no wonder that many people were scared of even attempting the task. That these structures were quite unnecessary has been often stated by me as a sloping sided pond can be made quite easily without any form of former.

That the idea of this preparation structure was necessary dies very hard. Even in my book, "Garden Ponds", the publishers, quite against my permission, showed an illustration of the type of wooden structure required to make a pond, and so it is no wonder that the idea dies hard. With the use of a liner, the making of a pond becomes a task that is within the powers of any handyman. All that is required is to dig a hole the size of the pond required, anchor a strong liner across it, and fill with water. Such a pond could be filled and stocked the same day, although it is preferable to wait a week or so to let the water plants settle in. The only advice I would offer to anyone considering making such a pond is to get the best type of liner, as a cheap one might not last nearly as long as a good or higher priced one. I have found the Butyl liner an excellent type and can recommend its use to others.

Although the construction of the pond is easy, it does appear that many pondkeepers soon come up against a few problems, perhaps after a few weeks. The main one is the fact that the water becomes green and the fishes cannot be seen. This is quite a natural happening, as any water exposed to the light will turn green within a week. This is due to the presence of a form of *algae* which is a free-floating, single-celled plant. This can only thrive in a good light, as if the water was shaded the *algae* could not grow. This gives some indication as to how to combat the growth of this plant. A good covering with water-lily leaves will tend to prevent the growth of the *algae*, but with a newly constructed pond, this is not possible. However, it is possible to get a thick covering with Duckweed, which will tend to keep out much of the light. There are remedies on the market but I have not heard of pondkeepers who have been very successful with these cures. Of course, it would be easy to use chemicals which would quickly kill the *algae* but, unfortunately, they would also kill not only the fishes, but useful water plants as well.

I have recently heard from a correspondent that it was stated on the television that mussels would eat blanket weed and I was asked for my opinion on this. Now I did not hear this myself and so do not know if it was said that mussels would eat blanket

Swan-mussel showing exhalent and inhalent siphons at right

weed or that they would eat the single-celled free-floating *algae*. If the latter I have no reason to argue with this, but if it was said that the mussels would eat blanket-weed, then I am afraid that this is not the case. Let us consider the mussel and try to clear up this point.

The mussel in question was stated to be the Swan mussel (*Anodonta cygnea*). This is a freshwater mussel found in many waters which have a good bottom of mud or mulm. Most of our canals prove a suitable media for them and in such water they can grow up to eight or nine inches in length. As for their ability to eat blanket weed it is necessary to consider their construction. This bivalve is joined by a hinge at one end and it is this part which

is near what is known as the foot. There is no head to the mussel and only the foot protrudes from the shell. It is by this that the mussel moves about in the mud with a large proportion of its bulk embedded in the mud. At the opposite end from the foot, when the halves of the shells open, there are situated two tubes, one is the inhalant siphon and the other the exhalant. Water is drawn through the first-named tube and discharged through the other. While the water is passing through the mussel is able to extract any tiny forms of vegetable or animal matter. Therefore small particles of matter such as free-floating *algae*, could be consumed. In principal it would appear that a number of these mussels in a pond would be able to control the green *algae*, but just how many would be required is anybody's guess. It must also be realised that the *algae* can increase at a very fast rate and so it would be a matter of conjecture as to which would win, the mussels or the *algae*.

Ramshorn Snail

Having considered the possibilities of their use, let us now look into the chances of using them to advantage. As I have stated, the mussels can only move about in a good depth of mud and so if this was not present the mussels would soon die. A dead mussel in a pond will soon decay and there are few things which would pollute the water more quickly. Now, supposing these conditions are right, what effect will the mussels have on the fishes? In the first place, as they have no teeth, they cannot harm the fishes in that way. However, the question of harm does not end here. These mussels are likely to breed in the right conditions and so we must consider how this is done.

The larger mussels, such as the Swan mussel, have distinct sexes and a large number of eggs are formed by the females during summer. These are stored in the gills in brood pouches and are fertilised by the male sperms through the inhalant siphon. In the following spring the *larvae* are expelled by the female into the water. They are known as *glochidium*, and are somewhat like a miniature mussel but with tiny teeth at the open end. There is also a

Freshwater winkle

thread-like appendage which catches on a water plant and provides an anchor for the *larvae*. For these *larvae* to develop properly it is essential for them to become attached to a fish, and unless one is able to do this as a fish swims through the weeds, it is not likely to live.

The *larvae* that are fortunate to get attached to a fish take a grip with the tiny teeth and hold on to the fish. The fish then makes a form of cyst against the irritation, but the young mussel remains on the fish, feeding on it until it develops into a proper small mussel, when it drops from the fish and carries on its existence separately. It can be seen from this that even if the mussels could do a job in clearing up some of the free-floating *algae*, their presence in the pond could cause damage to the fishes. Although the feeding of the young mussel on the fish might not have fatal results, the fact that the skin has been punctured can provide the spot where other germs of diseases could enter.

Whether their use in a pond justifies their introduction is anybody's guess, but perhaps in a well-planted tank with a good depth of mulm, one or two could tend to keep down the free-floating *algae*, but their frequent moving about could disturb the water plants, making their use problematical.

One often hears the suggestion that water snails will also keep a tank or pond clear of harmful weeds, etc. Most experienced aquarists will not have any snails in their tanks, as most of the snails prefer to eat the decorating water plants before tackling any of

the unwanted matter. They also like fish foods as much as do the fishes and anyone who has watched a water snail gliding at the surface of the water after dried food has been given for the fishes, will know of their ability to suck in this food, and by this sucking action they are able to draw in food from quite a distance. If they are unable to clear up all the dried food, they then foul the rest with slime so that the fish refuse to eat it.

The water snails usually kept in tanks and ponds are either the Great Pond snail (*Limnaea stagnalis*), or the Great Ram's Horn snail (*Planorbis corneus*), but although some aquarists favour the latter as it is said that they are not as likely to eat water plants as the former type, their presence in the pond or tank is of questionable value. These snails are supposed to clean up a tank or pond, but I have never found that their use compensates for their nuisance. It is largely thought that they provide food for the fishes but most fishes can only eat them when they are very small, and at such a size their food value is neglible. I know that Tench can suck even large snails from their shells but I am sure that this is not likely to happen with goldfish. As for their cleaning of the front glass of a tank, the most they are likely to do is to make a narrow lane through the green *algae* on the glass which shows up the rest more clearly than before. By the way, some people have written to me to ask if what they have found on the undersides of water-lily leaves are the eggs of goldfish, but these bunches of eggs bear no resemblance to the eggs of goldfish. The eggs of the large water snail are laid in a sausage shaped lump of jelly whereas those of the Ram's Horn are laid as a blob.

The two previously mentioned species lay eggs, but both are capable of producing eggs by self-fertilisation, but it is usual for two snails to join up for this purpose. There is another type of water snail which produces tiny snails alive and these are the viviparous. Such is the freshwater winkle

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The AQUARIST Crossword

Compiled by Dr. D. M. Hawcroft

CLUES

ACROSS

1. A tetra with white-tipped fins (11, 5).
5. An alternative, and less frequently used, name for a discus (9).
9. Can be a pond-side plant, often yellow flowered, but also found in tanks as part of the fish (4).
11. A method of fry incubation or gestation which surely could not be practised by a talking catfish? (4).
12. Genus of popular carps of Far Eastern origin. Interesting community fish as they constantly move near the water surface. Easy to breed but generally keen egg eaters (11).
13. In order for a fish to breed "he" will require this (3).
15. Sounds made by a catfish from Greece? (2).
16 and 12 Down. A peaceful community fish; said by some to be a *Puntius* and by others a *Barbus*. Noted for its reddish colour especially when breeding (4, 4).
17. A "blue" cichlid (5).
19. Each one is obvious in oviparous fishes. Present in viviparous fishes but not normally seen (3).
20. Slow-growing Eastern plants, generally low-lying and not requiring much light. Useful aquarium plants often used in foregrounds (12).
22. Alternative name for Jewel Tetra, or Tetra minor (6).
23. All fishkeepers should have one of these sources of information readily available (4).
24. If water pH is too high, this can be added slowly and carefully over a period of time (4).
26. Term used for a number, or a finger; perhaps also what cichlids do to gravel (5).
27. Brilliant-coloured North Atlantic fish of the mackerel group; rarely found in the home but sometimes seen in public aquaria (5).
29. Perhaps the clown fishes and harlequin fish feel like one of these (4).
30. Many people mistakenly use only one of these when trying to move fish (3).
31. Term given to the mass of eggs in a female fish (3).
32 and 37. Ideally fish should be fed at least at these times (abbrev.) (2, 2).
33. Site of cultivation of cattle, crops or even fish.
35. Perhaps guppies feel like sending this when meeting piranha? (abbrev.) (3).
38. Commonly found and serious fish parasite, manifest as spots on the surface of the fish. Can only be killed when the parasites leave the fish to look for another host (16).

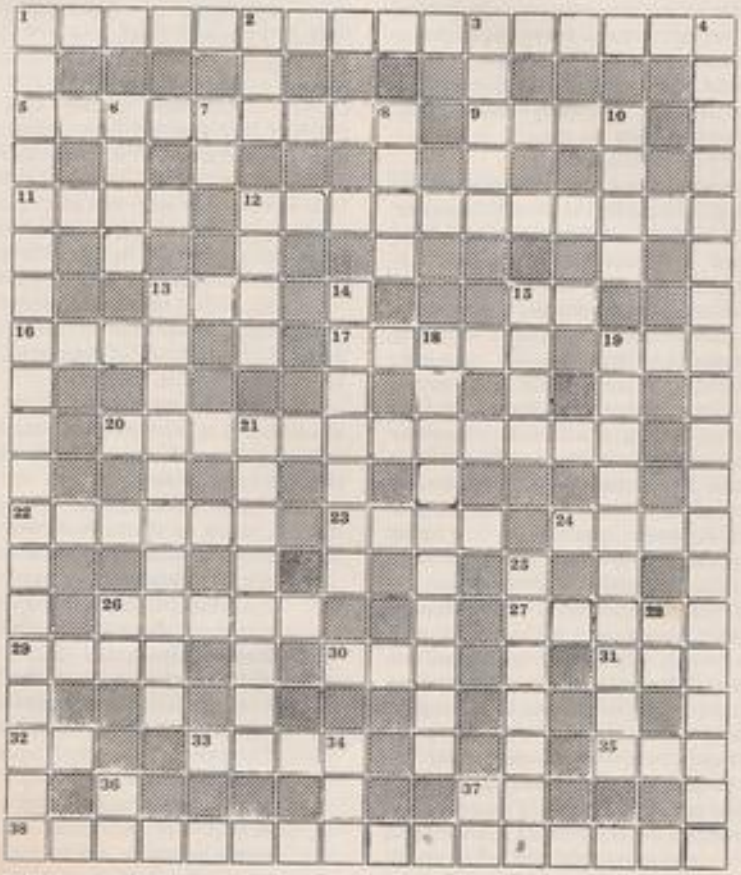
DOWN

1. A mouth-breeding fish, not of Egyptian origin. Named after the English missionary, M. Moffatt (12, 7).
2. The colour perhaps best enhanced by the "Grow-fast" type of tube (3).
3. Some fish are built like this in order to protect themselves from predators (5).
4. Conditions caused by a type of fungus which attacks only unhealthy or damaged fish (11, 8).
6. Some should be included in the diet of most if not all cichlids (4).
7. Term used in a show to indicate a completely open class of fishes (abbrev.) (2).
8. Display tanks must have some of this for maximum effect (4).
10. Not suitable for freshwater tanks as poor circulation in it leads to putrefaction of settled food and waste. Coarser grades are recommended (4).
12. See (16) Across.
13. An easily grown popular plant of bog-origin. Tends to have bright green oval leaves on a woody stem (10).
14. Fast-growing bushy plant with rosettes of divided leaves. Requires strong light if not to go slimy but is very good for breeding tanks (7).
15. Quantities of offspring we hope for? (4).
18. Groups of plants often growing from bulbs. Plants usually have broad leaves which in one species are beautifully perforated (10).
19. A group of plants which usually consist of masses of cylindrical grass—like leaves. Often used in spawning tanks as protection for young fry and eggs. Needs good light and spreads by runners (10).
21. The genus to which guppies and mollies belong (8).
25. Popular fish capable of breathing some atmospheric air. Often has "feelers" and tends to build nest when breeding (7).
26. A term used to indicate the level of an important gas in water (abbrev.) (2).
28. What piranha may say on siting the guppies? (2).
34. Collecting of fibres, often of nylon, and used for catching spawn in breeding tanks (3).
36. A German scale used for indicating levels of water hardness (2).
37. The scale used to denote various degrees of acidity and alkalinity in water (2).

(*Viviparus viviparus*), which retains the eggs until the young snails are fully formed when they are released into the water. These snails have a questionable use in the pond or tank but it appears that once any are introduced it is difficult to get rid of them afterwards.

The use of various fishes as scavengers is another arguable point. Many pondkeepers believe that a catfish is essential in a pond for success. This is not so as I am sure that any healthy goldfish is just as good a scavenger as a catfish, providing it is not overfed. Any healthy goldfish is almost continually ranging around the pond, at the sides or among the water plants, sucking at everything as it passes, removing much of the *algae* and other matter it can find. When one considers that catfish are carnivorous, it is easy to realise that they can eat any fish small enough for them to swallow or take a nip from any larger fish. Tench are also said to be useful in the pond. The old-fashioned notion was that they were able to clean an ailing fish of its pests or diseases, and were termed the doctor fish. This is rather fanciful thinking as although I have nothing but praise for the tench as a pond fish, I do not think that its presence is likely to keep pests and diseases from any fish. As for its use as a scavenger, again I doubt very much if it is any better than a goldfish as it eats practically the same foods and so anything in the way of waste matter it eats could also be eaten by a goldfish.

One point about introducing mussels or snails to a pond must not be lost sight of; that is the chances of introducing pests and diseases which could harm the fishes. The dreaded liver-fluke which affects sheep must spend part of its metamorphosis inside a water snail. There is also no proof that flukes such as *Gyrodectylus* and *Dactylogyrus* cannot be brought in by water snails or freshwater mussels. Even frogs are capable of being hosts to certain types of flukes and so their presence in ponds could be of questionable value.



Solution on page 359

MARINE QUERIES

by Graham F. Cox

IN MANY books on marine aquaria, I have read of the desirability of starting with a tank of no less than 20 gallons capacity.

Could you tell me whether this rule could be "broken" by those willing to keep their aquarium fastidiously clean?

I have a 24 in. bow-front aquarium at my disposal. I wonder whether this, together with a high turnover rate filter and aeration and using top-quality products, would suffice to keep a small selection of Damsels and Clowns alive and in good health.

ANSWER

In the past, in order to get the infant marine hobby off on to a sound footing, I have always said that a beginner in this, the most demanding branch of the aquatic hobby, should not use a tank of less than twenty gallons capacity for his early endeavours. However, enormous strides have been made in the last three years in a variety of directions.

We have greatly increased our understanding of the biochemical processes taking place within the marine aquarium both in its initial "unbalanced" stages, and later as a balanced and mature biosystem. Of especial importance here has been our discovery and appreciation of the fundamental route of nitrogenous matter through the biotope and the changes occurring in its chemical composition (and toxicity) en route. Also, whilst discussing the biochemical discoveries, we must not forget the oxygen—carbon dioxide—carbonate—bicarbonate system as affected by respiration, excretion and photosynthesis within the functional sea aquarium. These latter changes in the chemical structure of a number of compounds have a pronounced effect on the pH of seawater, whether captive in an aquarium or in the ocean, but of course are much more sudden and dramatic in the smaller body of fluid.

In terms of simple animal husbandry, our knowledge concerning coral fish diseases and pathology is now much greater than before. In the early Sixties, we knew only of oodinium disease, and fishes which died from other than natural causes, or obvious inbalances in simple physical parameters such as temperatures, specific gravities, maladjusted pH valves, cheap and inadequate saltwater formulation, etc., were viewed with the sort of ignorant superstition that primeval man reserved for such natural phenomena as thunder and lightning. Today we recognise (and can safely cure), oodinium, Benedenia, White Spot disease (Cryptocaryon disease), copepod infestation, Lymphocystis bacterial infections of wounds, etc.

Also, because more people have successfully kept more and more species of coral fishes and invertebrates, a great fund of knowledge has been built up concerning the "social" compatability permutations of known and imported species. We now understand and are much more sympathetic toward the psycho-territorial requirements of many coral reef species of animals. Gone are the days when popular American aquarium literature advocated that beginners should buy six *Amphiprion percula* (Common Clownfish) as his first fishes (this species is more prone to oodinium disease than perhaps any other common coralfish and cannot tolerate even a small nitrite reading), herd them into a ten-gallon tank (far too little territory for so many Clowns of the same species) at a specific gravity of 1·025 at 78°F (far too high a density at this temperature—should be 1·020 at 78°F otherwise the increase in metabolic loading will quickly kill off the fishes). It is little wonder that with this sort of irresponsible slaughter going on in so many homes, *Amphiprion percula* is now almost extinct in the Philippines where most American-consumed Common Clowns originated.

The above is a short, and, therefore, of necessity, an over-simplified critique of the hobby's evolution to date. With this body of knowledge providing support, I can advise you as follows:—

By all means go ahead and set up your 10-gallon aquarium as a saltwater habitat, but please bear the following in mind, otherwise in all probability you're heading for trouble:—

(1) Forget Clownfishes. You will have a nitrite reading in the early weeks of your biosystem's life which clownfishes are *unlikely* to survive. Stick to Damselfishes until the filtration system has matured bacteriologically and the nitrite content of the water has fallen to zero.

(2) Buy only *two* small (½ in.-¾ in.) damselfishes of *different* species from the following: Domino Damsel (*Dascyllus trimaculatus*), Humbug Damsel (*D. arnanus* or *D. melanurus* and preferably Philippino specimens since they are prettier and less aggressive than the Western Pacific and Indian Ocean specimens).

(3) Whilst ever the nitrite reading persists (buy a sensitive *nitrite test kit*) dose with "Cuprazin" oodinium cure *every other day*.

(4) Install a good, fast turnover-rate undergravel filter which preferably has no "blind spots"—i.e., unfiltered areas (see "The New SeAquarium System" for details of how to "tailor-make" such a unit).

(5) Feed in an extremely miserly fashion. This should be given as one or two tiny flakes of dried food per fish, twice per day. Any uneaten food reaching the bottom of the aquarium will only serve to exacerbate and prolong the nitrite problem.

(6) Only when the nitrite reading has peaked (probably 10-20 parts per million of nitrite salts at the second to third week) and fallen to zero, *and remained at zero for one full week*, should you consider the purchase of a showfish (Angels, Butterflies, Surgeons, Tangs, Batfish, Wrasse, Grunts, etc.) or two.

(7) *NEVER, NEVER*, exceed a stocking ratio of 1 inch of fish to 2 gallons of seawater. Ideally, a beginner will not exceed 1 inch of fish to 4 gallons of water for 6-9 months, until he has acquired the "feel" of running a marine aquarium.

Finally, to give you heart, I would inform you that for the last nineteen months, my very busy showroom staff have successfully kept a Domino damsel, a Humbug Damsel, a small Fire Clown and a 2 in. Butterfly fish in a tank identical to the one you propose using, with no attention other than a once-daily feeding and a once-every-3-months change of 25 per cent of the seawater.

PRODUCT REVIEW

Promethyasul Broad Spectrum Aquarium Remedy and Preventive, a new product manufactured by Wardley Products Co. Inc., of New York, distributed by T.F.H. (Great Britain) Ltd., 13 Nutley Lane, Reigate, Surrey, RH2 9HR, price 40p per 1 fl oz.—which treats up to 120 gallons of water.

This new, liquid, aquarium remedy and preventive is supplied in a handy, plastic dropper bottle, and the printed card with which it is supplied states that it is "the most effective yet devised." It is said to be effective in the treatment of most disorders of tropical fishes. The product contains: Sulfamylon (Mafenide Hydrochloride), 9-Aminoacridine HCL, Tetramethylthionine Chloride, and Malachite Green, making a total of 2·4 per cent active ingredients; the inert ingredients are given as: Demineralized Water, and Sodium Lauryl Sulfate, making a total of 97·53 per cent.

For mild infections, one teaspoonful of Promèthyasul is added to each 10 gallons of aquarium water; for moderate to severe infections, one teaspoonful is added to each 5 gallons of water. Filtration and aeration should be continued, and the water kept at 75-80°F. The slight bluish-green discoloration which occurs during treatment is said to gradually disappear. Treatment should be repeated as necessary. The makers recommend that newly purchased fishes should always be treated with this new product, to rid them of any parasites which they might be harbouring, before introducing them into their permanent quarters. This treatment consists of keeping the fishes in water to which one teaspoonful of Promèthyasul has been added to every 5 gallons. Such treatment lasts for 24 hours. As a disease preventive, one teaspoonful of the liquid is added to each 20 gallons of water once per week. One is cautioned to keep the product out of the reach of children, and to prevent it from coming into contact with clothing.

As none of my fishes was diseased when I received the product for reviewing, I was unable to test it practically, but such a broad spectrum aquarium remedy and preventive should be useful—particularly to aquarists who are unable to recognise specific diseases which affect their fishes. (I have used the Americanised spellings of words as supplied with the sample literature.)

B. WHITESIDE.

Hobby Long-Long Air Diffuser, manufactured in Germany, can be obtained from Hillside Aquatics, 29 Dixons Hill Road, Welham Green, Nr. Hatfield, Herts., price 72p.

This original diffuser stone is approximately 10 in. long, by ½ in. deep, by 1 in. broad, and is housed in a plastic casing which leaves only the upper surface exposed. The casing is in green plastic, and the unit comes complete with a length of air-hose attached. The unit is placed on the gravel or base glass of the aquarium, and is inconspicuous. In use it gives a splendid curtain effect of very fine bubbles—almost like an underwater waterfall in reverse—and the amount of aeration provided is prodigious, although a fairly strong air pump seems to be necessary for the full effect. This product is both practical in application, and aesthetically pleasing when operating in an aquarium. I found it most effective when placed near the rear of the tank. As well as providing good aeration and an attractive effect in the tank, it also ensures even distribution of heat throughout the water. It is equally suitable for coldwater, tropical or marine tanks.

Diffuser stones have been used by aquarists for many years, and a variety of sizes and shapes have been available. The Hobby Long-Long diffuser stone must surely be one of the most original designs to come on to the market of late!

B. WHITESIDE.

OUR EXPERTS' ANSWERS TO YOUR QUERIES

READERS' SERVICE
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Letters should be addressed to Readers' Service, The Aquarist & Pondkeeper, The Butts, Brentford, Middlesex, TW8 8BN

TROPICAL QUERIES

by Jack Hems

Would you recommend *Hyphessobrycon serpae* for a community tank already stocked with guppies, small barbs, dwarf and honey gouramis, opalescent fish and zebras?

Not unreservedly. Large "Serpae" nip at the fins of smaller fishes. Therefore it is best to keep these tetras with fishes larger than themselves and lacking flowing fins or sluggish movements.

Is the opalescent fish easy to sex and breed?

In well-grown *Brachydanio albolineatus*—the fish popularly known as the opalescent fish or pearl danio—the female is the more solidly built of the two and lacks some of the brilliance of the slimmer male. Breeding is easy if you take measures to protect the eggs from the parent fish. An all-over mat of man-made fibres or the aquatic moss called *Vesicularia dubyana* will make an egg-protecting barrier. So, also, will a grid of glass or plastic tubes linked together with twists of aluminium or lead wire. But whatever egg-saving device you use, do not neglect to remove the parent fish from the breeding tank immediately spawning is over. Egg-scattering takes place during energetic drives. Most of the eggs will come to rest in the area provided for them. They hatch in about a couple of days and the fry will take flour-fine dried food and microscopic live food about two days later.

I have acquired one of the Synbranchid eels. Its name I do not know, but it has a greenish-brown back and lighter sides adorned with even lighter spots and an orange belly. It spends a lot of time hidden in the plants or buried in the sand, and is about 9 in. in length. Can you give me any idea of the maximum size of these eels and their disposition and behaviour in the aquarium?

Their behaviour you have outlined in your letter, that is to say, they like to avoid the limelight and so hide away in thickets of plants and behind stones. Their disposition is far from inoffensive. Indeed, they are predatory by nature. In size they attain anything from about two to three feet. It is not unlikely that your fish is the species known to science as *Amphipnous cuchia* from India. It reaches about 3 ft.

What, in your opinion, is the best plant to fill a dark corner of a tank?

Without question the plant called Java moss. I have known this moss to spread "fingers" all over the back of a tank screened most effectively from bright light. It looks particularly attractive growing towards the surface from a piece of weighted bark or rough-surfaced stone.

Please give me the maximum size and scientific name of the hi-spot rasbora?

The hi-spot rasbora was described for science as *Rasbora dorsiocellata* as long ago as 1904. It reaches about 2¼ in. In all probability it should be called (popularly) the eye-spot rasbora.

As the fire-bellied toad is almost wholly aquatic, could I keep some of these delightful amphibians in my tropical aquarium that is matted over part of the surface with floating fern?

I have kept fire-bellied toads on and off for about forty years, but I have never risked keeping them at a tropical temperature. I feel certain they would go into a decline if they were subjected to a temperature in the middle to upper seventies (°F) for any length of time. Another thing, they will grab at small fishes cruising at the surface. The place for fire-bellied toads, and yellow-bellied toads, for that matter, is in a roofed-over but adequately ventilated tank (furnished with a mossy or grassy island) maintained at ordinary room tempera-

ture or outdoor temperature, with protection against excessive cold or frost.

How can I grow on brine shrimps to a fair size?
Increase the temperature of the tank in which they are living, supply oxygen from an air pump, provide slightly more salt, and drip-feed soupy green water.

Is there any truth in the statement I read that *Elodea densa* will rid a tank of *algae*?
It all depends on the sort of *algae* you have in your aquarium. Green water—free-floating *algae*—will die down very rapidly if *Elodea densa* is allowed to branch freely in the aquarium and thus soften a too-bright side- or top-light. Again, filamentous *algae* cannot make much if any headway in a tank given over to a tangle of *Elodea densa*.

Is it true that the flounder can be kept in the heated freshwater aquarium?
Young flounders collected in estuarine waters off the eastern seaboard of the United States have been kept as aquarium pets for about as long as I can remember, but the true freshwater flounder is native to Brazil and is known to science as *Achirus errans*. Information about this interesting fish may be found in the loose-leaf edition of *Exotic Tropical Fishes*, by Dr. Herbert Axelrod and others.

I am a newcomer to the hobby of tropical fishkeeping and would like your advice on the following. I bought a flashy male guppy to add colour to my community aquarium, but all it seems to do is to display before and streak after my platys and lunge at them. Always his attacks are from the rear or the side. Should I get rid of this pugnacious guppy before damage is done?
Your male guppy is in need of female company of his own kind. Give him this and his interest in the platys will stop almost immediately. But, in any case, your guppy is not attacking the platys. He is only trying to attract attention and prove his virility.

I should like to have some information on breeding lamp-eyes.
The tiny *Aplocheilichthys macrophthalmus* breeds, and keeps alive longest, in water that is old, soft, and well-stocked with delicate-foliaged plants such as nitella or dwarf bladderwort. A female ripe for spawning is easy to recognise by her swollen shape and the fact that her eggs can be seen behind the stretched skin. The eager couple indulge in plenty of driving and pauses during which large eggs are deposited in the greenery. There is no need to remove the parent fish. The eggs hatch in about a fortnight and the usual tiny live food and powdered dried food should be made available to the fry.

I am often puzzled by the popular names given to fish. An appellation that seems queerer than most is fighting gaucho. What bearing does this popular name have on a small South American killifish?
This cyprinodont hails from south-eastern Brazil and beyond, that is to say from the mudholes of the pampas. The pampas are the traditional lands of the gauchos or South American cowboys. The fighting part of the name is derived from the fact that the fish—*Cynopoecilia melanotaenia* or whatever—is quarrelsome and the males should not be kept together, that is in a small aquarium.

COLDWATER QUERIES

by Arthur Boarder

I have a 60-gallon fibre-glass pool with three goldfish and two Dog fish. The water is cloudy and I can hardly see the fish. Nobody seems able to tell me anything about the Dog fish. Can you help please?
The name Dog fish is usually applied to the Mud Minnow, either *Umbra limi* or *Umbra pygmaea*. These are North American fish and seldom grow larger than four inches in length. You are not likely to see much of them in your pool as they keep fairly low in the water. Your pool is small and so is more difficult to keep in good order than if it was larger. You have probably been feeding more food than the fishes can clear up and this will pollute the water.

I have recently made a tank, 48 x 12 x 14 inches, and have six goldfish of various colours. Can I put any more in the tank and what shall I feed them on?
The tank is a good size but I cannot say what extra fish you can add as you have not stated the size of those already in the tank. It will hold, safely, twenty-four inches of fish, not including the tail. As for food, you can feed them on most of the foods as eaten by human beings, they are not fussy. There are plenty of fish foods on the market and you can make your own choice, and it is better to vary the dried foods occasionally and try to give some live foods when obtainable.

I have a garden pond with a fountain and plenty of water plants. The goldfish I added spawned this year but suddenly the older fish

started dying off. They appeared to have no signs of damage or disease and before they died they were to be seen mouthing at the surface in the mornings and bubbles were to be seen on the water. What is the cause, please?

When pond fishes die and show no sign of disease or injury, it is almost certain that the water is impure. Even plenty of water plants may not help, as they do not give off oxygen during the hours of darkness. There may be something decaying in the pond which has polluted the water and the fountain will do nothing to clear the water, but just circulate the foul water around. You must realise that as fishes eat, so they must discharge their waste matter which can soon add up to a dangerous level. As with a tank in the house, so it is with a smallish pond. Some of the water needs changing occasionally. It is surprising how soon the fishes come on the feed after a quantity of water has been removed from a pond and fresh water added. One should not attempt to feed the fishes the first day of the change but after that they can be fed as usual.

I would like to breed fantail goldfish but I wonder if it is easier to breed them in a garden pond or in a tank in the house. If the pond is better do you have to look for the eggs in the water or in the weed?

It is far easier to breed goldfish in a pond than in a tank, unless you are experienced at fishkeeping and have more than one tank. When the fish spawn they chase vigorously and after this you can see the eggs on the water plants. They are adhesive, about the size of a pin's head and almost transparent. If some weed is lifted from the water, any eggs show up more plainly with a pale amber tint. As for rearing the fry, you will find articles in *The Aquarist* during the breeding season which will help you. The book you ask for, "Coldwater Fishkeeping," is now out of print. It is being revised, enlarged and will probably be published in the near future with a hard cover. The main important fact to remember when breeding either in a pond or tank is that most of the eggs are likely to be eaten by the spawning fish, or if any escape to hatch then the fry can also be eaten. I had a spawning this year from ribbon-tailed goldfish in a small pond and managed to save some eggs from floating duck weed. I am sure that many eggs must have remained in the pond but I have not seen one young fish in the pond although from the few eggs obtained I had a fair hatching.

I have recently found some small worm-like creatures on fish eggs. Are they harmful and if so how do I get rid of them?

I suspect that these are the *larvae* of one of the tiny flies which lay their eggs in the water. The *larvae* are transparent and can be seen best with a magnifying glass. They creep about over eggs and plants and may be able to eat into the eggs, but I have no definite proof that they do so. The *larvae* form a *pupa* which continues to move about and when fully developed it comes to the surface, the skin splits and a tiny delicate fly emerges. I have watched these do so and it is almost a miracle how these small creatures can stand on the surface of the water and almost immediately fly away. I imagine that few open ponds are without some of these *larvae* and when water plants are taken from a pond with eggs attached, it is almost certain that some of the *larvae* will be among the plants. It is quite possible that a fairly mild solution of permanganate of potash would kill the *larvae*.

I have some Golden Medaka, *Oryzias latipes*, in a tank at 14°C (57·2°F), and they have been spawning. The eggs appear fertile but none have hatched. Can I expect them to hatch at this low temperature and what is the hatching period normally?

These fish should be kept at a temperature of 25°-30°C (77°-86°F) and the eggs usually take 10-12 days to hatch at a temperature of 28°-30°C (82·4°-86°F). The eggs may hatch at the low temperature you are using but it would be safer to increase it, at least until the fry hatch and grow a little. These fish are said by some to be rather delicate and so yours have done well to have spawned at such a low temperature.

I have a fish pond in my garden, 3ft. 8 in., by 2ft. 8in., and 12in. deep. My fish keep getting fungus. I use tapwater; should I use rain water?

Your pool is not much larger than a good-sized tank and you have not given the number of fish therein nor their sizes. You may have over-stocked and over-fed. I consider that tap-water is safer than some rain water. If you could be sure that the rain water you use is quite clean and pure it would be good to use. If rain water is caught from a roof it could be badly polluted with soot and dust. After heavy rains have washed the roof the rain water could be safe enough. Check up on your feeding and stocking problems and you may be more successful, but your pool could become dangerous to the fish in severe weather, especially in your district.

I have bought some fish advertised as Celestial goldfish but they do not look much like it at present. They are only about an inch long but look as if they might be Lionheads and not what they are supposed to be. How can I tell?

Your fish are small and it is possible that they may be Celestials all right. The eyes do not move up to the upper part of the head at first but develop as the fish grow. You may have to wait a bit to be sure as even Lionheads do not develop their hood when very young.

"FLOATING CONCRETE"

by Michael Lorant

FLOATING concrete blocks are among several lightweight materials that can *cut evaporation losses in small fish ponds during hot weather.*

These floating blocks aren't made of the freeway type of concrete but a mixture containing perlite ore as a lightweight aggregate instead of sand and gravel. The blocks are cast into tiles 7 by 11 inches and 1½ inches thick. In tests, blocks covering 80 per cent of the water surface reduced evaporation by 60 per cent.

Reducing evaporation can save fish, time and money. Hauling cost in the U.S. per 100 gallons of water start at about 4 dollars—sometimes nearer 10 dollars—while evaporation control may cost less than 1·50 dollars per 100 gallons.

K. R. Cooley, staff research meteorologist at the U.S. Water Conservation Laboratory in Phoenix, Arizona, also tested wax, perlite, styrofoam, butyl rubber, and other lightweight materials. He finds wax the most feasible right now. Wax cut evaporation 100 per cent for the area covered; also, it is easier to handle than most of the other materials, including the concrete blocks. It is applied by squirting molten wax through a nozzle directly on to the water. The wax forms circles 6 to 8 inches in diameter and about 1½ inches thick.

Although one wax tested had a tendency to melt on very hot days, a new wax with a melting point at about 130°F. should not cause similar problems under hot conditions.

Another way to curb evaporation losses is by sprinkling loose perlite directly from bags on to the surface of the water. On one 53-by 78-foot fish pond in Arizona, the perlite cut evaporation 20 per cent during an 8-month study. Perlite, like other loose materials, has a tendency to stack up on the lee side of a pond when wind velocities are brisk, however, it redistributes when the wind recedes.

No appreciable reduction in the size or number of fish was noted in ponds during these studies.

Along with saving water, the materials reduced weeds and algae in ponds by cutting off sunlight and inducing cooler temperatures.

GRAND AQUARIST SEMINAR
Sunday, 14th January, 1973
Derby Playhouse, Sacheveral Street, Derby

OFFICIAL Opening 9.30 a.m. To help those who have a long way to come, the film "The Fish Embryo" will be shown until the first lecture at 10.15 a.m.

Lunch break 12.15 p.m. to 2.0 p.m.

Refreshments and Buffet Lunch at reasonable prices, licenced bar.

"The Fish Embryo." A fish egg from the moment of fertilisation to hatching, 20 minutes time lapse microphotographs in colour.

"Fish." Evolution of fish and their relatives, sequences in natural habitat show behaviour pattern and adaptation to environment. Selection from: Haplochromis Multicolor, Archer Fish, the Double Helix Daphnia, Gene action, Port Koalunga reef, natural selection, goldfish.

A whole day of talks, 16mm. films and other features, the first such event in the area, we hope to provoke lively and productive discussion.

DR. CARRINGTON, of Interpet. The principles in the use of various aids including recent sophisticated items, and their effect on the aquarium biosystem. He has recently visited Japan, the home of Koi Carp and hopes to have something to say, and slides to show about this.

GRAHAM COX, of SeAquariums, ex-director Brighton Aquarium, author of "Tropical Marine Aquaria." The enormous range of marine life now available requires an extremely stable environment. The latest methods enhance the natural processes and simplify upkeep.

ROY SKIPPER, of the House of Fishes. The Discus is one of the most demanding of fish, but well worth the effort. Mr. Skipper's talk is famous throughout the South of England and, with a brilliant series of slides, he traces the origins of the various species and explains their care and breeding.

Admission by ticket only, obtainable from the Secretary, J. Bland, 5 Cumberhills Road, Duffield, Derby, DE6 4HA, price 60p each. Party rates 50p each, for 10 or more, if booked before 18 November, 1972.

We regret that we do not consider the occasion suitable and must therefore refuse to admit children under 14 years of age.

We reserve the right to make changes in the programme without notice. Refunds are at the discretion of the committee. Visitors will observe the rules and regulations of Derby Playhouse.

Cheques should be made payable to Derby Regent Aquarist Society.

From a Naturalist's Notebook

by Eric Hardy

CONSERVATION is now a fashionable subject flung about with a lot of environmental rhetoric at the opening and closing of those cosy weekend gatherings of tea-creepers and seekers of jobs-for-the-boys, the figureheads which have climbed upon the band-waggon without much experience of the subject outside an air of superiority and creeping into the right social circles.

We who prefer to go outside and get some use out of the world while there is anything left of it, seldom see the pompous kid-glove presidents and armchair dignitaries of these proliferating national bodies and their interminable conference-fee conferences which tell us what we already know over social-climbing coffee mornings and "trading stores." The countryside and its wildlife mean nothing more to most of the umbrella-and-handbag brigade than an entertainment of colour transparencies, or glamorous films introduced by Lady Semolina Rice-Crispie. Using table-napkins adorned with bird-pictures or dinner-plates covered with elephants and tigers may rate you high in the social peck-order of modern bird-lovers and TV personality-worshippers; but often, like the Levite, it passes by on the other side urgent conservation needs at home.

Consider one of Shropshire's richest haunts of aquatic plants and other waterlife, the disused old arm of the canal between Waterloo and Whixall on the flat northern plain behind Whitchurch. One of our most experienced aquatic plantsmen mentioned to me recently his great concern because that weedy old arm of the Shropshire canal seems to be threatened as a major nature-haunt by plans for a marina. This will clear it out and remove its rarities and many of its shady trees and shrubs. The local farmer made him gasp at what is planned to do with it.

Here the bitterling, an interesting coloniser of British waters this century, became an addition to Shropshire's breeding fauna, as it did to that of Lancashire, Cheshire, Yorkshire, the Home Counties and elsewhere when anglers, using it for live-bait, liberated surplus supplies at the end of their day, and aquarists added it too.

As most readers know, the female bitterling lays her eggs singly through an ovipositor into the gaping shell of the live swan-mussel. The male's milt is swept in to fertilise it with the normal inhalent siphon by which the mussel feeds. If these mussels are cleaned out of the old canal, the bitterlings will die out for they cannot breed like other members of the carp family without their hosts, the swan-mussel.

I mentioned bitterling to a rich bird-lover dripping with mink and gold-plated investment jewellery, and she thought I meant some kind of tinned sardine.

The British Herpetological Society has a conservation committee which has appointed regional representatives to check all the breeding areas of the British herpetofauna, with a view to saving further losses. However, herpetologists are very thin on the ground. Many last only the few years of studentship and after passing exams or obtaining degrees lose all further energy for field-work. Our local naturalists' association, the largest in its area, only heard of it by accident. Its gaps must be great.

Microscopists will be interested that 21 specialists have combined under the editorship of Kwang Jeon to produce Academy Press's new textbook, *The Biology of Amoeba*.

At Hawaii's Oceanic Institute at Waimanalo, the breeding of grey mullet has been controlled to make them spawn five months earlier than usual, by controlling temperature with cooler water, by light periods made shorter, and injecting the female with hormones. The critical survival of the fry three days after hatching, after nourishment by the yolk-sac ends, was achieved by using an upwelling system in the tanks to prevent the larval fish from settling. In the sea, thermal layers in the water keep them afloat, but in a tank they sink to the bottom at this stage and their tender skins break or are bruised by the bottom of the tank, then their injuries lead to infection and mass mortality. It is hoped to apply the technique to rearing other fish, like the dolphin fish or dorado (not the dolphin cetacean).

Honest anglers do not exaggerate more than 25 per cent, but the *Sunday Times* claimed on 8th October that a 12 lb. 2 oz. bass, winning its captor £400, in a 2,000-angler competition at Colwyn Bay was "a new Welsh record," cannot be accepted in the records of our sea-fish. T. Browne, who had three fish over that weight at Bangor in 1935, as I described in the now defunct pre-war *Anglers News*, made the Welsh "record" then with 16 lb 6 oz. This was also the British "record" until an 18 lb. 2 oz. specimen was caught at Felixstowe. Bass reach our western channels from February to November; some even stay all winter off Anglesey. Though they are found off Swansea, Port Talbot, etc., on the South of Wales, the biggest fish are found in autumn around Anglesey and the Menai Strait. Several over 14 lb. were

caught from Caernarvon pier after dark. Even in the day, fish from 9 to 14 lb., over 30 inches, could be seen swimming around the concrete structure of the pier. Bass over 12¼ lb. have also been taken in Cardigan Bay (Gwbert) and off Holyhead's long breakwater.

Browne belonged to the days when anglers caught bass for sport, a test of skill, not the present-day sweepstake fishing depleting inshore waters. 2,000 anglers would make fish hook-shy for weeks. Bass summer in our rocky inshore waters and the Laminaria zone, feeding on small fish, crabs and shrimps; but they are scarce when many tope are about. They used to be kept in the sea aquaria at Blackpool prom. and Plymouth Hoe.

Anglers' records are a misleading guide to fish sizes. Apart from the fact that they seldom sex their fish (females of course are the larger and often weighted with roe, especially congers), or give length, much bigger fish never get into their records if they are not hooked. Bass grow to 3 ft. and 30 lb. weight. But they are slow-growing fish. They take 16 years to grow to about 8 lb. weight. Mass angling contests of 2,000 rods are bound to deplete their stocks even if they are migratory fish from mainly Mediterranean lands.

They range north to the Clyde and are often in shoals off the Channel coasts of Dorset and Sussex. These 2,000-angler sweepstake matches (there were recently seven miles of anglers contesting for prizes like colour TV sets along the beach near Swansea), make the recent suggestion of marine nature-reserves more urgent. Biologists also want parts of our coast set aside for sea-urchins, sea-fan corals, scallops, ormers, lobster and crawfish to be safe from over-collecting by skin-divers and fish-spearers. Something towards this was effected at the Isle of Man last spring when fish-spearing was banned for some 20 miles from Niarbyl Point to Chicken Rock and Santon Head, in case it interferred with fisheries researches from Port Erin. The Landmark Trust created an unofficial marine reserve at Lundy island and Torbay Borough Council established a sub-littoral reserve adjoining their local nature-reserve at Saltern Covey, Devon.

Early in 1972 the Natural Environmental Research Council set up a working party under Prof. R. B. Clark, of Newcastle, to advise on underwater marine nature reserves. In the U.S.A., the National Marine Fisheries Service has a list of some 20 endangered immobile creatures of the Continental shelf, prohibited to foreign fishermen. They include red and black corals, four kinds of sponges, red and pink and Japanese abalone, queen conch, several crabs and clams. One wonders if the present rapidly increased and extensive fishing for small queen scallops in Cardigan Bay will endanger their stock, as overfishing exhausted the former bed of them in the Firth of Forth. They haunt clean, firm shelly ground around our coasts. The small species *Chlamys varia* is more inshore than the commoner *C. opercularis*, which often lives in association with horse-mussels, to which the young queens attached their anchor-threads or byssus. Far less work has been done on their biology than on the common scallop. The queen's two shell-valves are alike, often richly pink or yellowish, ridged with white, and it swims as well as a common scallop.

Conservation in Britain has become largely unbalanced in favour of birds. It is relatively easy to gain support to set aside an area of coast as a wild flower or bird-reserve. Other groups for suitable reserves like the marine algae in the North Walney Channel off the top of Morecambe Bay, or inland haunts of aquatic plants like the disused Shropshire canals, are another matter. Indeed, in some places there are public moves to have old canals filled in because of the danger to children, even though the canals have existed over a century, as at Bootle, near Liverpool, where parents formerly kept a stricter watch over their litters of youngsters.

Crossword Solution

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

Answer to 'Can you find the tropicals?'

BLACK MOLLIES

Junior Aquarist

THE HARDY EUROPEAN REPTILES AND AMPHIBIANS IN CAPTIVITY (Part 8)

by Andrew Allen

14. The Natterjack Toad (*Bufo calamita*)

Description.—This small toad grows to a length of between 5 and 8 cms, with the female larger than the male. The body is short and thick set, though not rotund. It is readily distinguished from the Common toad through its unusually short hind limbs, and also the fact that the male bears a single, large vocal sac. He also possesses dark nuptial pads on the first three fingers of each hand. The back is covered in shallow warts, and coloured brown, olive or olive-green. There is often a distinctive bright yellow mid-dorsal line, and the warts may sometimes be tinged with red. Ventral colouration is cream spotted with grey, whilst the throat of the male is dark grey.

Distribution.—*B.calamita* is essentially a Western European toad, inhabiting Portugal, Spain, France, Switzerland, Holland, parts of Germany, Poland, Czechoslovakia and Southern Scandinavia. It is also found in Britain in a number of localities and in County Kerry in Southern Ireland. It can be found in many different habitats, though it prefers soft, sandy soils. Dry localities are tolerated, and it ascends to altitudes of 1,000ms in mountainous country.

Breeding Habits.—The mating season starts around April and may continue throughout the Spring and Summer. Amplexus is axillary, the croak of the male is both loud and distinctive. The eggs, usually a smaller number than in *B.bufo*, are laid in a double string that is wound around submerged vegetation. Breeding may take place in mildly brackish water.

Care in Captivity.—Notes on this subject should be preceded by a few words of warning. The Natterjack toad is under extreme pressure throughout Britain, its numbers have declined rapidly, and give serious cause for concern. Herpetologists should avoid any action that could cause further deterioration in the status of this species. No Natterjacks should be collected from any site in this country whatsoever, even if superficially they appear to be abundant. Neither should they be bought from dealers that cannot give an absolute guarantee of their origin—not all are as scrupulous in this respect as they could be. Irresponsible collecting, both on a large and a small scale, has undoubtedly played a major part in the decline of this species, in company, of course, with various environmental pressures.

It makes a fairly good inmate of the indoor vivarium, which should be quite large (four feet or more in length) to allow for its lively habits. There should be a small pool, and a good depth of soft soil, preferably a light, sandy loam, for the Natterjack is an accomplished burrower. A few shelters should be provided, and a certain amount of plant cover, but less than is necessary for the majority of batrachians. A little indirect sunlight will cause no harm at all. The onset of Winter causes the standard dilemma, which has been fully discussed in the previous articles of this series.

As with all of the truly hardy Amphibia, the best home for the Natterjack toad is one of the main types of outdoor vivarium. Reptiliary, greenhouse and cold-frame are all ideal, though in the case of the latter two forms of accommodation it should be remembered that *B.calamita* does prefer rather drier conditions than the frogs and newts that may accompany it.

The dietary requirements of this species are unremarkable, for it will take almost the full range of invertebrate foods. Mealworms and spiders are much appreciated, but most of the familiar live foods will be accepted with alacrity.

In so far as it has no offensive tendancies, the Natterjack toad makes a good community animal, especially as it is fairly immune from molestation by others. Standard villains like snakes, terrapins, and the largest lizards and frogs, should be regarded with jaundiced eye, but otherwise few restrictions need be imposed. It will happily accompany all the smaller frogs, toads, newts and salamanders, provided that it has access to reasonably dry areas. Equally it can comfortably be housed with all the small lizards if it is supplied with a pool and a few damp, shady corners. In practice this means that it can be fitted into just about any community of moderately sized Reptiles and Amphibians where the habitat is not over specialized.

This is a good species for the amateur who can devote a little time to its requirements. In return it will reward through its readiness to tame and its lively habits. But please remember my opening remarks—this interesting animal is very rare, and indiscriminate collecting could just push it beyond the point of no return.

There are no sub-species.

The Green Toad

15. The Green or Changeable Toad

(Bufo.v.viridis)

Description.—This beautiful species grows to a length of 6-9 cms, perhaps rather more in Southern regions. In contrast to the Natterjack and Common toads the female may be smaller than the male. General proportions of the body are more similar to those of the Natterjack than the Common toad. The male has nuptial pads inside the first three fingers of each hand, and a single, very considerable vocal sac. There are numerous warts on the skin, but these are rarely pronounced. Dorsal coloration varies somewhat between male and female specimens. In the male the ground colour is dark grey or olive with pale green patches. In the female the ground colour is lighter, but the patches are a much deeper green. In both sexes the warts may carry a reddish tinge. The smooth ventral surface may be a clear or dappled grey.

Distribution.—The Green toad is very widely distributed, and in general replaces the Natterjack in Eastern localities. It is absent from Spain, Portugal and much of France. But it is found in Belgium, Holland, High Savoy, Switzerland, Germany, South Scandinavia, Italy, the Balkans, Africa North of the Sahara, and right across Central and Southern Asia to the Himalayas and Tibet. It occurs in a variety of habitats, including areas of extreme aridity and, in Asia at least, of high altitude. It is perhaps even more tolerant of brackish water than the Natterjack, and certainly more so than any other European Amphibian.

Breeding Habits.—Mating commences in late April and may continue until September. The croak of the male is loud, but also more harmonious than that of most other familiar frogs and toads. A very large number of eggs, sometimes up to twenty thousand, are laid in two long strings.

Care in Captivity.—In rough outline this toad demands similar treatment to the Natterjack. Its size is almost identical, and in the wild it occupies the same environmental niches. It takes the same range of foods, has to avoid the same predators, and hence will fit into the same communities. But it is a distinct species with habits of its own, and it would be

a mistake, albeit not a serious one, to give it strictly identical care and conditions.

In the indoor vivarium excessive humidity should be avoided, and adequate ventilation is a must. The soil should be loose in texture and neither sodden nor parched, but just faintly damp. A small pool should be available, as should several caves and shelters. But plant life should be restricted, for the Green toad always tends to avoid forested areas. Indirect sunlight causes no trouble, and may even be mildly beneficial.

In considering this species as an inmate of the outdoor vivarium I must confess to some doubts concerning its hardiness. Many of the specimens imported come from North Africa or the extreme South of Europe, can survive intense heat reasonably well, but have rarely had to endure long winters. I stress the word long. Winters in these parts can be very cold, but rarely last many months. But in England the toads may be confronted with cold weather for up to six months in any year, and this could prove beyond the limits of their tolerance. I know of an instance where this species has been housed with complete success in a reptiliary in Southern England. Probably it would do well in a suitable reptiliary in most localities South of a line from Bristol to London. But I do not believe that would prove hardy enough to prosper in the rest of the country, except in certain mild and sheltered localities.

This being the case, greenhouse and cold-frame certainly constitute better homes. Both can provide the extra measure of warmth throughout the year that could prove vital to the well-being of this species. In any of these three forms of accommodation the Green toad requires a similar habitat to the Natterjack. It also demands a little open space—not for *Bufo viridis* the luxuriant mass of rampant vegetation that so suits the majority of Amphibians. But these requirements are easily complied with, and it fits comfortably into most communities of small lizards and batrachians.

The Green toad qualifies as one of the most attractive and vivacious of hardy Amphibians. Though principally nocturnal it sometimes emerges during daylight hours, and can always be tempted into the open with a maggot or a choice mealworm. My specimens have never become very tame, but have nevertheless been a constant source of interest and enjoyment. It can be safely recommended for indoor vivarium and for most types of outdoor vivarium, provided that the limits to its hardiness are accepted and understood.

There are no European sub-species, but *B.v.-arabicus*, from much of Africa North of the Sahara, may often be encountered on price lists. It requires identical treatment to its European cousin.

The next article will consider the Marsh frog and the Edible frog, two of the most spectacular and colourful of hardy Amphibians.

RELICS OF THE OCEAN'S LIFE

by Huw Collingbourne

THE strandline is the divide between sea and shore; it is where we find great brown fronds of bladder wrack drying in the sun. Occasionally, among the driftwood we find hermit crabs, oysters, anemones, sea urchins and starfish. Invariably there will be hundreds of little sandhoppers hidden among the weed. The sandhopper, *Talitrus saltator*, is a shrimp-like creature up to 16 mm. in length. It is found in profusion in just about all moist, shady places close to the sea. Pulling back a clump of damp seaweed recently washed up, you will almost certainly find scores of sandhoppers hopping in all directions. Surprisingly, sandhoppers can jump to heights of more than 30 cms.

Some interesting sponge skeletons can be found cast ashore. The yellow or green breadcrumb sponges are far from rare.

"Cuttlebone" is sometimes washed ashore and this is generally a seasonal occurrence. The "bone" is in

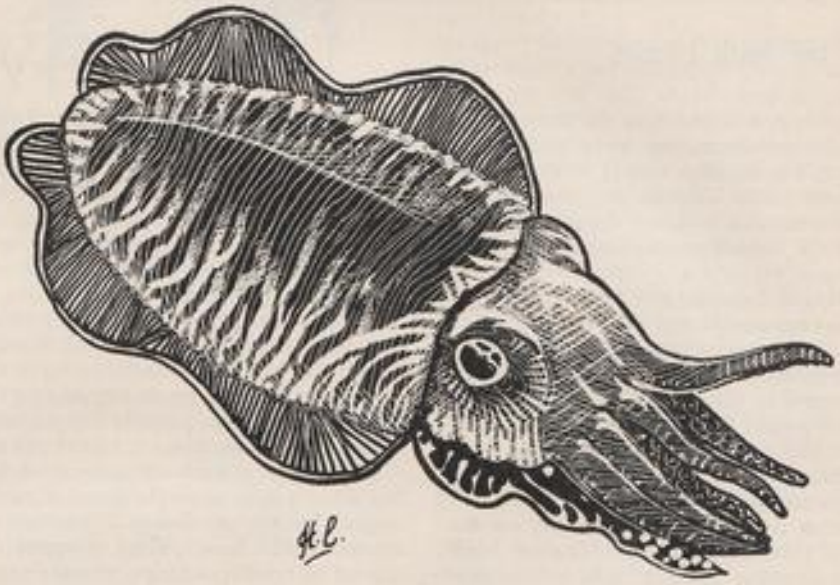
fact the internal shell of the cuttlefish, which, like the squid and the octopus is a type of mollusc. The "cuttlebone" is found inside the fleshy mantle, or body-part of the living cuttle. The chalky "bone" is, of course, the stuff given to cage birds because of the salt and calcium which it contains.

More familiar will be the spiral shells of the univalve molluscs like those of the whelk and winkles. One of the largest types of shell deposited on the sand is that of the common whelk (*Buccinum undatum*), up to 12 cms. long, though there is a type of univalve mollusc, called the spindle shell (*Neptunea antiqua*) that grows to 20 cms!

Usually much smaller, the winkles often have beautifully ornate shells. The sting winkle, for

but they are basically blue-greys and purple(ish)? bands with the odd speck of white spiralling down from the apex.

Rocks covered in hard, limy tubes may be seen all along every beach and are, therefore, easily found by the beachcomber. Upon closer examination, many of these tubes, it will be seen are triangular in cross-section. These tubes are constructed by minute tube-worms, 5 cms. long. When submerged in a small sand pool any living worms will eventually poke their heads out of the ends of the tubes. Then their true beauty can be seen. Like tiny peacock's tails in blue, red and yellow, they gently stroke against the water taking in oxygen and ensnaring any microscopic animals that come their way.



Cuttlefish

example, has a scaly, stone-like shell which gives a sort of weathered carved stone effect. Some of the varieties of periwinkle, on the other hand, have very smooth, brightly coloured shells, sometimes of a lemon, yellow or orange hue.

Before leaving the subject of univalve shells, I think a special mention should be made of the grey top shell, which is about 1.8 cms. This is a small, flat shell of striking beauty. It is often found but rarely identified. Most people seem to think it is either some colour form of periwinkle, or a rare and valuable species. It is neither. It may be distinguished by its unusual shape, for it is top shaped with a low, unpointed cone and an almost flat bottom. The markings are rather difficult to describe accurately,

In summer the egg cases of whelks often appear on the beach. These are tough, papery capsules clumped together in masses. Also the much larger egg cases of the ray, skate and dogfish can be found. These are collectively known by the rather quaint name of Mermaid's Purses. They are large, single, black or brown packets, the cases of dogfish bearing coiled tendrils at each of the four corners. These help to hold the capsule firmly to a piece of weed or a clump of coral while the embryo is still developing. It is unlikely, however, that the embryo would still be inside an egg case washed ashore.

But the possibilities do not end there. Anything that is in the sea can be washed ashore.

Whole whales are cast up with amazing regularity!

THE SPANISH RIBBED NEWT

by Jack Hems

Pleurodeles waltl is again included in the latest list of reptiles and amphibians sent out by a well-known Cheshire dealer. The Spanish ribbed newt, to give this member of the Order Urodela (Salamanders and Newts) its popular name, is native to the southern and western parts of the Iberian peninsula and the coastal regions of Morocco.

Understandably, in these days of feverish building and the vanishing countryside, it is rarer in these places than formerly. This largely explains, I fancy, why its selling price has rocketed up to £5·00 a pair. (Before the war, a pair could be obtained for as little as 25p). Yet even at £5·00 a pair, I consider *P. waltl* is a good buy. For given the right sort of food and the right sort of environment, it will make a most interesting and durable aquarium pet.

Alfred Leutscher is an authoritative writer on the herpetofauna of Europe. In his *Vivarium Life* (Cleaver-Hulme, London, 1952) he tells us that this newt has lived 20 years in captivity. My own three specimens, that appear to be in the best of health, have already spent seven years in their small but well-planted aquarium.

Let me say at once that the Spanish ribbed newt—the popular name is derived from the fact that the pointed rib-joints push out, thorn-like, and, in some cases, penetrate the skin on the sides—is the largest of the European newts. The maximum length cited is 12 in. But exceptionally it may grow larger. 'Specimens have been found up to 40 cm.' So says Dr. Walter Hellmich, Chief Keeper of the Zoological Collection in Munich, in his *Reptiles and Amphibians of Europe* (Blandford, London, 1962).

The general colour of both sexes is olive-brown to black, shading to greeny-grey to greyish yellow on the belly. Innumerable dark spots adorn the lower part of the body. The fore and rear limbs are strong and, like the rest of the body, covered with tubercular skin. The tail is fleshy in the middle but ribbon-like (compressed) along the margins. In most specimens the bottom edge is orange. The eyes are set wide apart on the broad but rather depressed head. The mouth is wide enough to gulp down a small fish or a young frog. Therefore *P. waltl* should not be kept with any other newt smaller than itself.

Sexing is carried out by comparing tails. The tail of the male is longer than that of the female. Also, during the breeding season (spring to early summer) small protuberances are developed on the underside of the forearms of the sexually mature male. Again, a female full of eggs shows a fuller belly and sides.

The Spanish ribbed newt is not a very active creature. But when it does go on the prowl, it moves in rather a bouncy manner, as though it has miniscule balloons attached to its toes. When it scents food, it either thrusts its head searchingly into the submerged vegetation or pushes its mouth shovel-like over the bottom. Contact with food (alive or dead) results in wild snapping of its jaws.

A tank 18 in. by 12 in. by 12 in. will make a suitable home for a pair. The floor should be covered with the usual carpet of well-washed sand. This in turn should be planted with some easy-growing plant such as *Elodea densa*, that will help to keep the water wholesome and clear. There is no need to include an island in the set up, for this newt, unlike our native species, shows no great desire to climb on to land. Usually, the nearest it gets to viewing this troubled world, apart from what it can make out through the glass sides of its tank, is to sprawl in or on the submerged vegetation and stick its head out of the water. But be this as it may, all newts are clever climbers and a glass cover, raised slightly off the top of the aquarium, will prevent escape. A temperature below 55°F (12°C) but above

45°F (7°C) is advised for a few months every year, that is from late autumn to early spring. For this seasonal lowering of temperature results in a slowing down of the bodily functions and is more in accord with what takes place in the wild. For general maintenance, however, a temperature range in the sixties or low seventies (°F) is perfectly satisfactory.

Feeding is no trouble at all. Earthworms, mealworms, strips of raw white fish or red meat go down well. All the same, this newt is not an ever-ready feeder. After a meal, it will usually go several days without eating again.

It is a good plan to feed *P. waltl* from the ends of forceps or from the fingers. For then one can be certain that there are no left-overs to foul the water. Even so, every so often a dip-tube must be used to clear away accumulated sediment.

I have never bred this fine newt over all the years I have kept it, but knowledgeable writers tell us that it can be persuaded to breed in captivity. According to what I have read, the male takes the initiative in the breeding ceremony and there is quite a performance as he attempts to make close contact with his mate. A responsive female will lay eggs, singly or in clusters, on stones or among the plants. A change of water or an abrupt change in the temperature (within reason) will sometimes trigger off courtship and mating. The gilled *larvae* metamorphose in about four months. Seemingly they (or rather the adult form) are not ready for mating until about two years later.

JAVA FERN

by Jorgan & Pamela Hansen

THE first time we heard of Java fern, *Microsorium pteropus*, was from an old experienced aquarist, who recounted what happened when he attached a small specimen of the plant to a tree-root in his 150-litre tank, which already contained a large and sturdy Amazon sword plant. In the course of the following year the fern covered not only the whole root but had also spread all around the rest of the tank, and the Amazon sword plant completely disappeared. This gives an idea of how well Java fern can thrive under the right conditions.

Microsorium pteropus is particularly interesting for two reasons. First, it exists in nature on dry land, in swamp, and underwater, and can thus be called amphibious. It is available to aquarists in two forms, the underwater form with spear-formed leaf, and the swamp form with cross-formed leaf. When the latter form is placed in an aquarium it begins to produce spear-formed leaves.

The swamp form of Java fern reproduces, in common with most other ferns, by means of spores, which are expelled on to the damp ground, where they sprout and strike roots. When the fern grows underwater, however, the spores are not expelled.

This brings us to the fern's second interesting feature, namely, that when underwater it is adventitious, i.e., the young plants form themselves on the leaves or stem of the old plant, instead of from the regular root system. First, the new leaf appears, then the roots develop, and eventually the old leaf will disappear.

In nature, the plant grows underwater for 4-5 months of the year and prefers a shady niche, usually the root of a tree. The roots of the fern do not descend into the ground, and when placed in the tank should not be pushed into the gravel but should instead be anchored to a tree-root or stone with an elastic band or the like. The plant thus takes its nourishment from the water. If left undisturbed it will spread, as previously described, over the whole root or stone, which can then be moved to another tank, if so desired.

Java fern can grow up to 50 cm. high in nature, but in the tank it doesn't exceed 20 cm., and the leaves are at the most 4-5 cm. broad. Young leaves are light green in colour but grow darker with age. The leaves are hairless, and both leaves and stem are very stiff and firm. The leaves form a bush-like appearance; the rhizome or root-stem is dark brown and tightly covered with root hairs, and grows in a creeping fashion. Dark brown attachment organs called holdfasts, which grow to a length of 1-1½ cm., develop from these root hairs, and are so strong that if one attempts to lift from the tank a plant attached to a tree-root, the latter comes out too.

Microsorium pteropus is found in soft water; tank water should not exceed 14° DH. It prefers a temperature of at least 20°C. It was first described by Von Blume in 1829 as *Polypodium pteropus* but was not introduced to the European aquarist until 1957 when P. Clupaty obtained the plant from Frankfurt, whence it had been imported from Java. It was then distributed in Germany and England under the name *Gymnopteris* species. It has also been described as *Leptochilus decurrens*, *Gymnopteris variabilis*, *Cimmopheria*, and *Gymnophtheria*. It belongs to the Family *Polypodiaceae*.

The plant is to be found not only in Java, but also throughout S.E. Asia, in Southern China, Malaysia, Indonesia, India, the Philippines and Ceylon. A small form with a short leaf stalk and smooth leaf, described as var. *minor*, is to be found in India.

All in all a beautiful and interesting plant which shouldn't have too much light, requires slightly acid water containing adequate nourishment, and generally needs to be left in peace. It is not very commonly seen in trade, so if you do see it and feel tempted, then buy it at once.

CHAMPION OF CHAMPIONS
Competition Results

1st	2nd	3rd
Mr. and Mrs. E. R. BIRD	A. KINSEY	R. HOARE
S.P.A. Discussion Group 90 pts.	Independent A.S. 85 pts.	Harlech A.S. 83 pts.

RESULTS OF OTHER FESTIVAL COMPETITIONS

Best Fish of the Show: J. S. Hall (Aireborough) 86 pts. Best Tropical Fish: J. S. Hall (Aireborough). Best Coldwater Fish: W. H. Ramsden (Northern Goldfish). Best Other than Best Fish in Show: 1, R. Shanks (Mount Pleasant), 2, H. Ormesher (Sandgrounders), 3, W. H. Ramsden (Nothern Goldfish). Best Society Furnished Aquarium—Tropical: 1, Northwich 71 pts.; 2, Valley 65 pts.; 3, Aireborough 64 pts. Coldwater: 1, Bury 72 pts.; 2, Accrington 57 pts.; 3, Osram 49 pts. Best Individual Furnished Aquarium (Tropical): 1, L. Bradley (Northwich) 66 pts.; 2, A. Vaissiere (Merseyside) 65 pts.; 3, Wendy Heap (Belle Vue) 61 pts.; Best Individual Coldwater Furnished Aquarium: 1, B. Ogden (Northern Goldfish) 68 pts.; 2, H. Smith (Accrington) 61 pts.; 3, M. J. Goodchild (Valley) 60 pts. Best Aquascape Furnished Aquaria: 1, Mrs. Mathews (Northern Goldfish) 78 pts.; 2, N. Jackson (Worksop) 72 pts.; 3, H. Penhall (Osram) 69 pts. Novelty Aquascape: 1, Mrs. I. Strange (Basingstoke) 80 pts.; 2, J. Brearley (Belle Vue) 79 pts.; 3, E. Seymour (Merseyside) 78 pts. Common Goldfish and Comets: 1, W. H. Ramsden (Northern Goldfish) 79 pts.; 2, Mrs. O. Mathews (Northern Goldfish) 77 pts.; 3, Sonia Brearley (Belle Vue) 76 pts. Shubunkins: 1, B. M. Rothwell (Northern Goldfish) 68 pts.; 2, B. M. Rothwell (Northern Goldfish) 65 pts.; 3, H. Penhall (Osram) 64 pts. Moors: W. H. Ramsden (Northern Goldfish) 68 pts.; 2, W. H. Ramsden (Northern Goldfish) 67 pts.; 3, W. H. Ramsden (Northern Goldfish) 66 pts. Veiltails: 1, W. H. Ramsden (Northern Goldfish) 69 pts.; 2, W. H. Ramsden (Northern Goldfish) 67 pts.; 3, W. H. Ramsden (Northern Goldfish) 66 pts. A.O.V. Fancy Goldfish, Pantails, Orandas, Lionheads and any "New" Variety: 1, H. Penhall (Osram) 75 pts.; 2, J. S. Hall (Aireborough) 70 pts.; 3, C. Whitsey (Accrington) 67 pts. Any species of Coldwater Fish other than those above: 1, W. H. Ramsden (Northern Goldfish) 78 pts.; 2, H. Penhall (Osram) 68 pts.; 3, C. Whitsey (Accrington) 66 pts. Guppy (Single): 1, M. and D. Laycock (Sheffield) 69 pts.; 2, M. and D. Laycock (Sheffield) 67 pts.; 3, M. and D. Laycock (Sheffield) 63 pts. Guppy (Pairs): A. Charlton (Fancy Guppy Association) 63 pts.; 2, H. Hesketh (F.G.A.) 62 pts.; 3, R. Young (F.G.A.) 56 pts. Livebearers (Single) 1, J. S. Hall (Aireborough) 80 pts.; 2, J. S. Hall (Aireborough) 75 pts.; 3, H. Hubbard (Peterlee) 71 pts. Livebearers (Pairs): 1, H. Ormesher (Sandgrounders) 76 pts.; 2, Mr. and Mrs. Buxton (Hyde) 70 pts.; H. Leadbetter (Blackpool) 66 pts. Angels (Single): 1, Sonia Brearley (Belle Vue) 72 pts.; 2, Sonia Brearley (Belle Vue) 71 pts.; 3, I. Rowbottom (Hyde) 70 pts. Angels (Pairs): 1, J. Healey (Hyde) 69 pts.; 2, G. and A. Jackson (Belle Vue) 68 pts.; 3, Mr. Wild (Accrington) 63 pts. Dwarf Cichlids (Single): 1, H. Ormesher (Sandgrounders) 79 pts.; 2, T. Brook (Huddersfield) 77 pts.; 3, L. Thorne (Northwich) 74 pts. Dwarf Cichlids (Pairs): 1, C. Rigby (Stretfoed) 75 pts.; 2, B. B. Bisson (Basingstoke) 74 pts.; 3, J. Lang (Lanarkshire) 68 pts. Cichlids A.O.V. (Single): 1, I. Rowbottom (Hyde) 78 pts.; 2, H. Ormesher (Sandgrounders) 76 pts.; 3, J. A. Whiteley (Aireborough) 72 pts. Cichlids A.O.V. (pairs): 1, H. Christie (Lanarkshire) 71 pts.; 2, H. Christie (Lanarkshire) 67 pts.; 3, Mr. and Mrs. Ward (Middleton) 66 pts. Fighters: 1, J. Murray (Salford) 74 pts.; 2, M. D. Berry (Valley) 69 pts.; 3, Mr. and Mrs. Toyne (Sheffield) 67 pts. Gouramis A.V. (Pairs): 1, S. A. Heap (Belle Vue) 76 pts.; 2, G. W. and A. K. Jackson (Belle Vue) 68 pts.; 3, A. Axon (Ashton) 66 pts. Gouramis (Single): 1, G. Nickson (Peterlee) 75 pts.; 2, M. Strange (Basingstoke) 73 pts.; 3, C. Rigby (Stretford 72 pts. Barbs (Single): 1, R. Clift (Sandgrounders) 79 pts.; 2, F. Gregory (Oldham) 78 pts.; 3, K. Parkes (Merseyside) 74 pts. Barbs (Pairs): 1, C. Beckenham (Oldham) 80 pts.; 2, F. Gregory (Oldham) 79 pts.; 3, K. Stafford (Oldham) 76 pts. Characins A.V. (Single): 1, Mrs. I. Strange (Basingstoke) 79 pts.; 2, B. Wilson (Merseyside) 78 pts.; 3, R. Grange (Lanarkshire) 76 pts. Characin (Pairs): 1, R. Shanks (Mount Pleasant) 83 pts.; 2, L. Thorne (Northwich) 75 pts.; 3, H. Ormesher (Sandgrounders) 73 pts. Carps or Minnows (Single): 1, H. and R. McKenna (Nelson) 79 pts.; 2, Miss J. Gullane (Buxton) 78 pts.; 3, J. Dawson (Osram) 77 pts. Carps and Minnows (Pairs): 1, A. Moss (Huddersfield) 78 pts.; 2, S. A. Heap (Belle Vue) 74 pts.; 3, R. Johnston (Ashton) 68 pts. Catfish (Single): 1, D. Charlton (Merseyside) 74 pts.; 2, J. Padgett (Heywood) 72 pts.; 3, J. S. Hall (Aireborough) 68 pts. Catfish (Pairs): 1, R. Davies (Belle Vue) 75 pts.; 2, D. Jamieson (Lanarkshire) 74 pts.; 3, P. Kenyon (Belle Vue) 68 pts. Egglaying Tooth Carps (Single): 1, J. Roberts (Nelson) 76 pts.; 2, Thorne and O'Brien (B.K.A.) 74 pts.; 3, Thorne and O'Brien (B.K.A.) 72 pts. Egglaying Tooth Carps (Pairs): 1, B. Forrester (B.K.A.) 70 pts.; 2, B. Forrester (B.K.A.) 69 pts.; 3, B. Forrester (B.K.A.) 65 pts. Loach A.V.: 1, F. R. Fifield (Accrington) 74 pts.; 2, W. Worrall (Peterlee) 71 pts.; 3, H. and F. Batchelor (Loyne) 69 pts. A.V. other than classes above: 1, D. and R. Standen (Loyne) 75 pts.; 2, H. and P. Batchelor (Loyne) 69 pts.; 3, M. Tonge (Oldham) 68 pts. Breeders (Egglayers): 1, J. E. Shore (Osram) 76 pts.; 2, D. Charlton (Merseyside) 75 pts.; 3, A. B. Vaissiere (Merseyside) 74 pts. Breeders (Livebearers): 1, R. Young (F.G.A.) 76 pts.; 2, L. Thorne (Northwich) 71 pts.; 3, Mrs. P. Young (F.G.A.) 68 pts. Breeders (Coldwater): 1, R. Rothwell (Northern Goldfish) 74 pts.; 2, W. H. Ramsden (Northern Goldfish) 72 pts.; 3, J. S. Hall (Aireborough) 69 pts. Plants A.V.: 1, A. Beasley (Bury) 75 pts.; 2, Sonia Brearley (Belle Vue) 72 pts.; 3, J. Murray (Salford) 70 pts. Best Marine Furnished Aquaria: 1, H. Ormesher (Sandgrounders) 61 pts.; 2, N. Feldman (Belle Vue) 60 pts.; 3, A. Ashton (Buxton) 58 pts. Society whose members won the most points for its four highest pointed awards: Northern Goldfish. Individual Exhibitor gaining most awards: W. H. Ramsden (Northern Goldfish). Best Society Stands: 1, Belle Vue; 2, Basingstoke; 3, Northwich; 4, Middleton.

News from AQUARISTS' SOCIETIES

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

EARLY in October members of the **Grimsby and Cleethorpes A.S.** enjoyed a social evening. Table show results were: Male Guppies: 1 and 2, B. Pulford. A.O.V. Catfish: 1 and 3, M. Robinson; 2, A. Whitehead. Breeders Egglayers: 1, 2 and 3, B. Pulford. Juniors: 1 and 2, D. Kirk; 3, P. Metcalf. Fish of the Show: M. Robinson.

At the second meeting in October members were given a demonstration on setting up a Cichlid tank and a Characin tank. The demonstrations were given by Mr. B. Pulford and Mr. E. Holmes. After the demonstration the Junior members of the Society were given their chance to set up a tank in a competition among themselves. This competition was judged by Messrs. Holmes and Pulford and the result was: 1, D. Ibbotson; 2, K. Stanley; 3, D. Key.

Table show results for the evening were as follow: Large Cichlids: 1, D. Keeton; 2, A. Metcalf; 3, Mrs. J. Kirk. Corydoras Cats: 1, B. Pulford; 2 and 3, T. Walker. Pairs Egglayers: 1, R. Jennings; 2, Mrs. J. Kirk; 3, B. Pulford. Juniors: 1, P. Metcalf; 2, G. Wilson; 3, M. Sherlock. Fish of the Show: D. Keeton.

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RESULTS of the **Hucknall and Bulwell A.S.** open show were as follow: Guppies: 1, M. Laycock (Sheffield); 2, R. K. Pearson (Worksop); 3, B. J. Rogers (Cresswell). Swordtails: Mr. and Mrs. Newbold (Welbeck); 2, J. Dernie (Dukeries); 3, G. Twydale (York). Mollies: 1, J. S. Hall (Aireborough); 2, Mrs. Blades (Cresswell); 3, Mr. and Mrs. Jones (Welbeck). Platies: 1, P. Spittlehouse (Worksop); 2, C. Marsden (Worksop); 3, Mr. and Mrs. Jones (Welbeck). Small Barbs (up to 3 in.): 1, J. Snowden (York); 2, Mrs. Blades (Cresswell); 3, G. N. Douglas (Four Star). Large Barbs (over 3 in.): 1, S. Hill (Alfreton); 2, T. Smith (Sheffield); 3, Mr. and Mrs. Gilding (Gainsborough). Small Characins (up to Bleeding Heart): 1, Mrs. Blades (Cresswell); 2, R. K. Pearson (Worksop); 3, D. Wragg (Alfreton). Large Characins: 1, G. Thickbroom (Welbeck); 2, Mr. and Mrs. Downey (Sherwood); 3, B. Bailey (Sherwood). Killiefish: 1, Mr. and Mrs. Gabe (Chesterfield); 2, A. Curchin (Swillington); 3, J. Dernie (Dukeries). Minnows and Danios: 1, G. Malpass; 2, Mr. and Mrs. Smith (Sheffield); 3, T. Smith (Sheffield). Sharks and Foxes: 1, T. Smith (Sheffield); 2, J. S. Hall (Aireborough); 3, W. Blundell (Rossington). Rasboras: 1, D. Sewell; 2, M. Kidd (Nottingham and District); 3, Mr. and Mrs. Downey (Sherwood). Dwarf Cichlids: 1 and 2, J. Dernie (Dukeries); 3, J. Buck (Hucknall and Bulwell). Large Cichlids: 1, Mr. and Mrs. Gilding (Gainsborough); 2, Mr. and Mrs. Hatfield (Gainsborough); 3, G. Thickbroom (Welbeck). Angels: 1, S. Hill (Alfreton); 2, Mr. and Mrs. Davidson (Gainsborough); 3, Mrs. Lindley. Catfish: 1, Mr. and Mrs. Copley (Doncaster); 2, T. Smith (Sheffield); 3, B. Bailey (Sherwood). Loaches: 1, Mr. and Mrs. Davidson (Gainsborough); 2, Mrs. Blades (Cresswell); 3, P. Mighalls (Hucknall and Bulwell). Fighters: 1, Mr. and Mrs. Toyne (Sheffield); 2, J. S. Hall (Aireborough); 3, A. Marsden (Worksop). Anabantids A.O.V.: 1, G. Gillespie (Welbeck); 2, J. S. Hall (Aireborough); 3, Mr. and Mrs. J. Green (Cresswell). A.O.V. Tropical: 1, Mrs. M. Igoe (Sherwood); 2, J. S. Hall (Aireborough); 3, G. Thickbroom (Welbeck). Pairs (Egglayers): 1, J. Dernie (Dukeries); 2, A. Curchin (Swillington); 3, P. Spittlehouse (Worksop). Pairs (Livebearers): 1, J. Snowden (York); 2, J. Igoe (Sherwood); 3, Mr. and Mrs. Newbold (Welbeck). Junior Egglayers: 1, M. Thickbroom (Welbeck); 2, A. Dean (Alfreton); 3, Mstr. D. Richardson. Junior Livebearers: 1, S. Jones (Welbeck); 2, K. Newbold (Welbeck); 3, P. Smith (Sheffield). Goldfish and Comets: 1 and 2, J. S. Hall (Aireborough); 3, Mr. and Mrs. Foster (Cresswell). Shubunkins and Fancy Goldfish: 1 and 2, J. S. Hall (Aireborough); 3, Mr. and Mrs. Foster (Cresswell). A.O.V. Coldwater: 1, 2 and 3: J. S. Hall (Aireborough). Breeders (Egglayers): 1, J. Dernie (Dukeries); 2, M. Footitt (Alfreton); 3, T. Read (Worksop). Breeders (Livebearers): 1, Mrs. Moore (Bedworth); 2, Mr. and Mrs. Middleton (Gainsborough); 3, J. S. Hall (Aireborough). Marine: 1, F. Martin (Alfreton); 2 and 3, J. Igoe (Sherwood).

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RESULTS of the October table show of the **Suffolk Aquarists and Pondkeepers Association** were as follow: Catfish: 1, Mr. Turner; 2, Mrs. Woollard; 3, Mr. Howard; 4, Mr. Green. A.O.V.: 1, Mr. Howard; 2, Mr. Auffret; 3, Mr. Fenton; 4, Mr. Richardson.

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THE **Fancy Guppy Association** made a worthwhile return to the B.A.F. this year, through the Manchester Section F.G.A., winning both the Breeders and Pairs Guppies.

Members who staffed the stand were kept busy answering various questions and enquiries about the keeping, breeding and exhibiting of Guppies, including an enquiry from a visitor from the U.S.A. Among the varieties of Guppy which were on show the so-called Short Tail varieties, namely Swordtail, Coppertail, Pins and Spears, attracted as much attention as the Broadtails.

Some new members were enrolled at the stand and quite a number of membership forms were taken by interested people. Meetings are held on the first Sunday of the month at the Longsight Hotel, rear entrance to Belle Vue, Manchester, at 2.30 p.m. and new members would be most welcome.

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A SUCCESSFUL social evening was enjoyed by **Newbury and District A.S.** in September when an auction of many different lots, donated by club members, was successfully conducted by Vice-Chairman K. Lloyds, assisted by G. Turner. Table show results: Characins: 1 and 2, P. Bonfield; 3, G. Foster; 4, K. Hillier. Any Variety: 1, G. Foster; 2, G. Turner; 3, K. Hillier.

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OFFICIALS for the forthcoming year of the **Hucknall and Bulwell A.S.** are: President, E. Smith; chairman, Mrs. Sutcliffe; secretary, Mrs. B. Richardson, 11 Newlyn Drive, Western Boulevard, Nottingham, NG8 5GU; treasurer, G. Swanwick; show secretary, Mr. Sutcliffe; fund raiser, B. Kirk; social secretary, B. Blaylock; librarian, J. Buck; committee, Messrs. Mighalls, Freeman, Blair, Simpson, I. Hardwick; vice-chairman, M. Harrington; asst. show secretary, P. Simpson.

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THIRTY members of the **Uxbridge and District A.S.** attended the recently held annual general meeting. This year has seen club members do well at open shows and many major prizes have been won. In the five inter-club competitions two were won and three lost. Table show entries were down on last year but on the credit side club meetings had been well attended and many interesting speakers heard. The proposal to move to a new club room caused a very lively discussion and it was finally decided to look for better premises.

Principal prizewinners in the club competitions were D. Parsons, Best Fish of the Year; R. Newman, Highest Points also Breeders Egglayers prize; Breeders Livebearers, J. Parker; Pairs, H. Thompson; Junior Champion, K. Pettit; Home Furnished Aquaria, K. Wilton.

Principal officers for the coming year are as follow: chairman, J. Evans; secretary, B. Whitehead, 31 Berberis Walk, West Drayton, Middlesex; show secretary, Mrs. S. Whitehead; treasurer, N. V. Lee.

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THE first meeting, in October, of the **Didcot and District A.S.** was devoted to the fifth and final round of the Three Counties Aquarist Group Fish League. The results of the Individual Classes were as follow: Class I: J. Jackson (Basingstoke); L: M. Carter (Bracknell); UVW: A. Wilkinson (Didcot); M: J. Trinder (Didcot); S: R. Peck (Basingstoke); T: M. Strange (Basingstoke); X: R. Turner (Didcot). The results for the evening were Didcot 28, High Wycombe 26, Bracknell and Basingstoke drew with 24, Reading 13. Mr. P. Ginger of Uxbridge judged the show.

The final results of the 1972 Fish League were: 1, Bracknell 141½ pts.; 2, Basingstoke 137 pts; 3, High Wycombe 130½ pts.; 4, Didcot 92 pts.; 5, Reading 63 pts.

An overspill class was also held to accommodate the large number of fish not selected for the Fish League. This was judged, at short notice, by R. Bisson of Basingstoke. The results were as follow: 1, M. Carter (Bracknell); joint 2, G. Geary (Didcot) and R. Lesley (High Wycombe); D. Geffery, R. Rich, L. Ligford tied for 4th place. Apart from the fish competition, a very enjoyable social evening was had by the members meeting their many friends from the other four clubs. At the second meeting, the club had Mr. Mervyn Strange of Basingstoke as speaker on the subject of fish, which proved interesting and thought provoking. The table show was for Livebearers and was judged by Arthur Marshall of Basingstoke. The results proved a field day for the Guppy enthusiasts. 1 and 2, R. Turner; 3, A. Watts; 4, Mr. Thimbleby.

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AT the annual dinner of the **Llantwit Major A.A.** the chairman, Mr. R. S. Wigg, presided and among the members and guests present were the club's president, Ald. P. J. Smith, C.B.E., and representatives of Barry, Cardiff and Newport societies.

Presentations of the evening made by Ald. Smith included the Wing Commander Smith Cup to the member of the year, J. Thompson. The J. Holmes Memorial Cup for Breeders Egglayers went to A. Ibbotson and the Miles Thomas Points Cup for most points in the year was won by Master Paul Glover. The Stampton Cup for best fish in the September show was awarded to Paul Glover and the President's Cup for Breeders Livebearers to R. S. Wigg. Replica trophies for last year's winners were presented to J. Cilia, A. Ibbotson and S. Nelson.

The Llantwit Major A.S. meet on the second Tuesday of each month at the Town Hall, Llantwit. New members are always welcome.

IN October the **Gloucester Fishkeeping and Social Club** held their annual general meeting and prize giving. Due to the fact that he was on a business trip to Africa and the Far East the president John Wyatt was unable to be present. The following were elected as officials for the coming year: Chairman, R. E. H. Moulder; vice-chairman, A. W. Lamb; secretary, J. B. Adlam; treasurer, T. Collier; show secretary, T. Collier; table show organiser, A. Lamb; social secretary, Mrs. W. Collier. The club trophies were won by: the President's Cup: J. B. Adlam (table show winner); the Collier Cup: Dave Merrett (runner-up); the Aquaria Cup: A. W. Lamb (Home Aquarium contest winner); the Founder's Cup: G. Pattison (runner-up).

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A TOTAL of 185 Breeders' entries and 32 Furnished Aquaria entries and well-supported Plant Classes ensured a very successful 26th Annual Open Breeders' Show for the **East London Aquarist and Pondkeepers' Association** held early in October. Results: Club Furnished Aquaria: 1, Dunmow A.S.; 2, Leytonstone A.S.; 3, E.L.A.P.A.; 4, Witham A.S. Individual Furnished Aquaria: 1, A. Field; 2, N. Burger; 3, G. Green. Mini-Furnished Aquaria: 1, Mrs. P. Harris; 2, L. Baker; 3, K. Wrightson; 4, A. Bennett. Aquatic Rooted Plants: 1, K. Wrightson; 2 and 4, K. Priest; 3, B. Boulton. Aquatic Cuttings and Floating Plants: 1, J. Boss; 2, A. Bennett; 3, Mrs. P. Harris; 4, K. Priest. Barbs: 1, R. Argent; 2, K. Wrightson; 3, Mrs. I. Boss; 4, J. Boss. Characins: 1 and 2, K. Wrightson; 3 and 4, J. Boss. Cichlids: 1, W. Newman; 2 and 3, A. Field; 4, M. Pearson. Apistogr., Pelmat., Nannacara: 1 and 2, F. Vicker; 3, Mrs. P. Harris; 4, K. Wrightson. Labyrinths: 1 and 4, M. Pearson; 2, K. Wrightson.; 3, Mr. Watts. Egg Laying Toothcarps: 1, Mrs. P. Harris; 2, L. Baker; 3 and 4, W. Corby. Fighters: 1, 3 and 4, A. Pither; 2, W. Corby. A.O.V. Egglayers: 1, K. Wrightson; 2, Mrs. P. Harris; 3, P. Lambourne; 4, R. Argent. Livebearers: 1, H. Watts; 2, P. Gardner; 3, K. Wrightson; 4, L. Baker. Single-tailed Goldfish: 1, H. Watts; 2 and 4, W. Corby; 3, H. Burger. Twin-tailed Goldfish: 1, 2, 3 and 4, J. Linale. Dorsalless Goldfish: 1, 2 and 3, J. Linale.

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RESULTS of the second six-a-side competition of the **Bishops Cleeve A.S.** held at Gloucester in October were as follows: 1, Bishops Cleeve 877½ pts.; 2, West Gloucester 866½ pts.; 3, Hereford 804½ pts.; 4, Gloucester Fishkeepers 845½ pts.; 5, Gloucester Aquarists 839½ pts.; 6, Worcester 823 pts.; 7, Stroud 822 pts. The best Egglayer overall was Mr. McMillium from West Gloucester, and the best Livebearer was Mr. Rossitor from Gloucester Aquarist, both with 84 pts. Judging was done by Mr. Littleton and Mr. Parsons.

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THE **Leytonstone and Stratford District A.S.** held their annual general meeting in October, and the officers' list is now as follows: Chairman, R. O. Lugmayer; vice-chairman, Allan Hove; secretary, D. Monk, 6 Sumner House, Maddams Street, Bow, London, E.3; show secretary, F. Lamman, 73 Endwell Road, Brockley, London, S.E.4.; treasurer, D. Dale; assistant show secretary, Y. Stone; P.R.O., H. P. Lugmayer. The meetings are held every Thursday at 8 p.m. at the Harrow Green Baptist Church, Harrow Road, Leytonstone High Road, and all new members can be assured of a warm welcome.

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THE International Open Show of the **Fancy Guppy Association** took place in Birmingham in May, "international" being the key word for this year's show, as just over one-third of the entries came from exhibitors overseas. Of 691 entries put on the benches, 225 came from abroad, the remainder coming from the various sections of the F.G.A. There was a total of 1,032 fish on the benches.

Undoubtedly, the most outstanding achievement of the day was made by Mr. and Mrs. D. Phillimore of the Edmonton section, who accomplished a feat never before achieved at any of the international shows held by the Association, by taking fifteen awards, including all the major ones of Best Male, Best Female, Best Breeders, Best in Show and the Master Breeders Trophy, which must stand as a record for many years to come. Success this year too for members of the Birmingham section, who managed to send fish to this year's California International Guppy Show. They managed to carry away twenty-three awards, including seven firsts, six seconds, eight thirds and two fourths.

Details of the F.G.A.'s International 1973 Open Show are already well in hand and it is hoped to give details soon of a new class, to decide the F.G.A.'s world Guppy champion. Anyone who breeds Guppies can enter all classes at this show, except Master Breeders, whether they are members of the Association or not.

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IN October at the first meeting the **Brentwood A.S.** held an auction of fish and plants, which made a good profit for club funds. The second meeting this month saw a reunion with an old friend of the club in the shape of Mr. Harris accompanied by his equally knowledgeable wife. His lecture this time was entitled "Feeding your fish," and his thorough coverage of this subject included one or two foods which caused some surprise to some members. Also at this month's meeting there was another round of the Inter-Club Quiz between Brentwood, Billericay, Southend and Witham, with Witham as the host society. Although Brentwood were not very successful an enjoyable evening was had by everyone. The results of the quiz were as follow: 1, Witham; 2, Southend; 3, Billericay; 4, Brentwood. Table show results in October: Livebearers: 1, D. Green; 2, L. Dwight; 3, L. Trembling; 4, G. Green. Characins: 1, K. Canham; 2, L. Quarmby; 3, D. Green.

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THE evening's activities at the October meeting of the **Ilford and District Aquarist' and Pondkeepers' Society** were reports on the Home Aquaria competition and an auction. Results of the Home Aquaria competition were: 1, J. Hattam; 2, D. Seaman; joint 3, L. Smith, M. Perry.

The monthly table show held at this meeting was as follows: A.V. Twintail Goldfish: 1, 2 and 3, H. Berger. Breeders Class Tropical and Coldwater: 1 and 2, H. Berger; 3, Mr. Dixon; 4, Miss J. Frostick.

Results of the Annual All Classes Table Show were as follow: Individual Furnished Aquaria: 1, D. Seaman; 2, J. Hattam; 3, H. Berger; 4, M. Shadrack. A.V. Barb: 1, W. Rowe; 2, R. Ruth; 3 and 4, J. Frostick. A.V. Characin: 1, L. Smith; 2, J. Hattam; 3, J. Rendol; 4, W. Rowe. A.V. Cichlid: 1, P. Reade; 2 and 3, W. Rowe; 4, C. Olley. A.V. Labyrinth: 1, W. Rowe; 2, 3 and 4, M. Shadrack. A.V. Tropical Catfish: 1, R. Ruth; 2, J. Frostick; 3, J. Hattam; 4, W. Rowe. A.V. Rasbora: 1, J. Rendol; 2 and 3, C. Hackshall; 4, H. Berger. White Cloud Mountain Minnows and Danios: 1, 2 and 3: J. Frostick; 4, C. Hackshall. Loaches: 1, D. Seaman; 2, R. Ruth; 3, W. Rowe; 4, M. Brill. Labeo: 1, P. Reade; 2, W. Rowe; 3 and 4, J. Hattam. Breeders (Livebearers): 1 and 4, F. Hattam; 2, G. Irish; 3, D. Seaman. Breeders (Egglayers): 1 and 3, J. Rendol; 2, H. Berger; 4, M. Shadrack. A.V. Mollie: 1 and 4, J. Frostick; 2 and 3, J. Hattam. A.V. Swordtail: 1, M. Shadrack; 2, J. Frostick; 3, W. Rowe; 4, D. Seaman. A.V. Platy: 1, J. Frostick; 2 and 4, W. Rowe; 3, M. Shadrack. A.V. Guppy (Male): 1, 3 and 4, F. Hattam; 2, W. Rowe. A.V. Guppy (Female): 1, M. Shadrack; 2, M. Knott; 3, A. Glassock; 4, W. Rowe. A.V. Singletail Goldfish: 1, Mrs. C. Donne; 2, C. Hackshall; 3, H. Berger; 4, F. Hattam. A.V. Twintail Goldfish: 1, 2 and 3, H. Berger; 4, W. Rowe. A.O.V. Coldwater Fish: 1 and 2, W. Rowe. A.O.V. Tropical Fish: 1, W. Rowe; 2, 3 and 4, Mrs. P. Reade. A.V. Tropical Plant: 1, M. Shadrack; 2, 3 and 4, F. Hattam. A.V. Coldwater Plant: 1 and 4, M. Brill; 2 and 3, H. Berger. The Best Egglayer in the show was a Rosaceus by L. Smith, his only entry in the fish sector. The Best Livebearer in the show was a Speckled Mollie by Miss J. Frostick. The most successful entrant in the show was W. Rowe with 17 awards.

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GUEST speaker at the **East Kilbride Aquarium Club** was J. Wilson of Edinburgh, who gave a most interesting talk and slide show on Characins. The results in the table show were as follow: Characins A: Seniors: 1, I. McLaren; 2, J. Thomson; 3 and 4, P. Clenaghan. Juniors: 1, K. McKenzie; 2, S. Trevethick; 3 and 4, N. Murtagh. Characins B: Seniors: 1, J. Ewing; 2, A. Hynds; 3, J. Findlay; 4, J. Thomson. Juniors: 1 and 4, A. Stuart; 2, T. South; 3, N. Murtagh. Characins C: Seniors: 1, J. Thomson; 2, J. Ewing; 3, Mrs. Purcell; 4, B. Merkell. Juniors: 1, H. Jones; 2, A. Stuart; 3, J. McLaughlin. Medallion for Best Fish in Show went to J. Ewing.

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AT the regular third Monday in the month meeting of the **New Forest A.S.** (F.B.A.S. George Danby presented a slide lecture describing "Freshwater Fish Parasites." Although somewhat gruesome it vividly illustrated many different types of parasite including the lamprey with its round sucking mouth and incredible number of teeth which has caused so much damage to fish in the North American lakes. The results of the Fancy Goldfish class table show were as follow: 1, R. Travers; 2, 3 and 4, R. Percy. Both first and second places in the Top Breeders Trophy for fish up to twelve months old were taken by D. Lane.

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THE **Manchester Grammar School A.S.** had its inaugural meeting in October which was well attended. The society has nearly forty-five members and two members have given a talk entitled "Setting Up Your Aquarium."

However, many of the members would like more specialised subjects to be discussed and for this outside speakers are especially welcome. Please contact the secretary, R. J. Horesh, c/o Receiver, Manchester Grammar School, Old Hall Lane, Manchester, M13 0XT. Anyone who is interested may speak for half an hour to an hour on most school days.

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WINNERS of the table show at the first meeting in October of the **Banbury and District A.S.** were: 1, L. Poole; 2, I. Ward; 3, S. Plumb; 4, S. Durnly. Four members of the society formed a panel to invited questions from members. This proved to be a great success and will be introduced to most of the meetings. A furnished jar competition was held at the second meeting of the month. Winners were: 1 and 2, L. Poole; 3, Miss H. Keen; 4, T. Cooper. A tape/slide show was also held. The subject was Fish On Stamps and this was provided by the Leamington Society.

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IN August, the **Tottenham and District A.S.** organised the aquaria section of the Haringey Show. Coldwater was the main theme, although Tropical Marine and Freshwater Furnished aquaria were included. A much admired decorative pond was set up by R. Ilsden and other ponds were arranged by L. Bromley, of Lea Bridge Aquatics, to help decorate the masquee. A new idea at an open show was tried out, an air ring main, which was very successful in supplying every tank with plenty of aeration.

The following class results were decided by Messrs. Close and Essen. The Haringey Council Special Awards: Best Club Furnished Aquarium Shield, T.D.A.S.; Best Independent Furnished Aquarium Cup, Mrs. I. Nutt; Best Marine Furnished Aquarium Cup, J. Bromley; Best in Show Cup, P. Kadwell, Celestial. Single Entry Awards: Singletail, U.A., U.V.: 1, T. Howles; 2 and 3, R. Dudley; 4, K. Nutt.

Singletail, U.C., U.D.: 1, P. Kadwell; 2, D. Goodbody; 3, L. F. Clements; 4, D. Nutt. Twintail, V.A., Veiltails: 1, 3 and 4, D. Nutt; 2, P. Kadwell. Twintail, V.B.-E.: 1, 2, 3 and 4, P. Kadwell. Twintail, V.H.-K.: 1, 2, 3 and 4, P. Kadwell. A.O.S., W.: 1 and 2, R. Dudley; 3, T. Howles; 4, K. Nutt. Breeders Twintail, X.V.: 1, P. Kadwell; 2 and 4, D. Nutt; 3, A. Lawman. Plants, Z.: 1 and 4: D. Nutt; 2 and 3, K. Nutt.

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MEMBERS elected at the annual general meeting of the **Reading and District A.S.** are as follows: Chairman, A. Gibson; assistant chairman, P. Rushbrook; secretary, S. R. Broome; treasurer, E. Sedman, 40 Calcheck Drive, Woodley, Berks., RG5 4LA; fish steward, D. Hambleton; committee members, M. J. Davies, R. Drummer.

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THE **Privateers A.S.** meeting in October was addressed by J. Hemmingway of Batley, on the subject of General Fishkeeping. Many questions were asked and answered and the speaker's deep knowledge of the subject was very evident. It proved to be a thoroughly enjoyable evening for everyone.

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THE first open show of the **Chesterfield and District A.S.** was a great success. The Rose Bowl for Best Fish in the Show was won by Mr. and Mrs. P. D. Copley of Doncaster with a Cat Fish. Out of a total of 559 entries, Aireborough was the society gaining the most number of points. J. S. Hall won the award for the most entries (34). Guppies: 1, 2 and 3, H. Laycock (Sheffield). Platys: 1, P. Whelan (Blackburn); 2, G. Andrews (Hull); 3, Mr. Spitthouse (Worksop). Swordtails: 1, G. Andrews (Hull); 2, Mr. and Mrs. C. Beckenham (Oldham); 3, M. Darington (Alfreton). Mollies: 1 and 2, J. S. Hall (Aireborough); 3, P. Mighalls (Hucknall and Bulwell); A.O.V. Livebearer: 1, J. S. Hall (Aireborough); 2, Mr. and Mrs. Downing (Sherwood); 3, Mr. and Mrs. Davison (Gainsborough); Characins (under 3 in.): 1, Mr. and Mrs. Dains (Doncaster); 2, G. Maddass; 3, J. Wright (Alfreton). Characins (over 3 in.): 1, B. Bailey (Sherwood); 2, Mr. and Mrs. M. Davison (Gainsborough); 3, Miss S. Clarke (Barnsley). Dwarf Cichlids: 1, Miss J. Gullane (Buxton); 2, Mrs. Lord (Valley); 3, R. Clayton (Chesterfield). Large Cichlids: 1, Mrs. Crossland (Worksop); 2, Mr. and Mrs. W. Gilding (Gainsborough); 3, L. J. Wheeler (Bishops Cleve); Angels: 1, Mr. and Mrs. M. Davison (Gainsborough); 2, P. J. Greenland (Bishops Cleve); 3, K. Brunt (North Staffs.). Barbs (under 3 in.): 1 and 2, Mr. Snowdon (York D.A.S.); 3, J. Wright (Alfreton). Barbs (over 3 in.): 1, Mr. and Mrs. Cohen (Castleford); 2, J. Howard (Valley); 3, Mr. and Mrs. Stanton (Sheffield). Egglaying Toothcarps: 1, Mr. and Mrs. Blades (Cresswell); 2, Mr. Carr (Doncaster); 3, T. Smith (Sheffield). Carps and Minnows: 1, Mr. and Mrs. Smith (Sheffield); 2, G. Malpass; 3, Mr. and Mrs. Toyne (Sheffield). Labeos, Sharks and Fores: 1, W. Blundell (Rossington); 2, Mr. and Mrs. Stanton (Sheffield); 3, J. S. Hall (Aireborough). Fighters: 1, J. S. Hall (Aireborough); 2, Mr. and Mrs. Cohen (Castleford); 3, Mr. Holmes (Castleford). Large Anabantids: 1, J. S. Hall (Aireborough); 2, Mr. and Mrs. Cohen (Castleford); 3, Mr. Orton. Small Anabantids: 1, Mr. and Mrs. Cohen (Castleford); 2, Mr. and Mrs. M. Hatfield (Gainsborough); 3, Mr. Jackson (Worksop). Danios and Rasboras: 1, Mr. and Mrs. Cohen (Castlefoed); 2, T. Smith (Sheffield); 3, Mr. and Mrs. Downing (Sherwood). Pairs Livebearer: 1, P. J. Greenwood (Bishops Cleve); 2, J. Igoe (Sherwood); 3, Mr. Axon (Ashton-under-Lyne). Pairs (Egglayers): 1, Mr. Spittlehouse (Worksop); 2, Mr. and Mrs. Davison (Gainsborough); 3, R. Clayton (Chesterfield). Breeders (Livebearer): 1, T. Douglas (Hull); 2, J. Igoe (Sherwood); 3, Mr. and Mrs. Toyne (Sheffield). Breeders (Egglayers): 1, Mr. and Mrs. Cohen (Castlefoed); 2, Mr. and Mrs. Parkin (Independent); 3, Mr. and Mrs. Churchin (Swillington). Catfish and Loach (under 3 in.): 1, Mr. and Mrs. Blades (Cresswell); 2, T. Smith (Sheffield); 3, Mr. and Mrs. B. Marshalsea (Oldham). Catfish and Loach (over 3 in.): 1 and 2, Mr. and Mrs. Copley (Doncaster); 3, B. Bailey. Corydoras (inc. Brochis): 1, Master R. Downing (Sherwood); 2, K. Brunt (North Staffs); 3, Mr. and Mrs. Clarke (Barnsley). A.O.V. Tropicals: 1, D. Grogan (Blackburn); 2, Mr. and Mrs. C. Goodman (Oldham); 3, K. Brunt (North Staffs). Common Goldfish: 1 and 2, J. S. Hall (Aireborough); 3, J. M. Bower (Sherwood). Fancy Goldfish: 1, 2 and 3, J. S. Hall (Aireborough). A.O.V. Coldwater: 1 and 3, J. S. Hall (Aireborough); 2, Mr. and Mrs. B. Foster (Cresswell). Shubunkins: 1, 2 and 3, J. S. Hall (Aireborough). Black Moors and Calicos: 1, 2 and 3, J. S. Hall (Aireborough). Novice Class A.V.: 1, Miss D. Bailey (Sherwood); 2, P. Staniforth (Don Valley); 3, K. Wood (Buxton). Furnished Mini Jar: 1 and 2, Mrs. B. Gabe (Chesterfield); 3, R. Harlow (Derby Regent).

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THE results of the second open show of the **Buxton and District A.S.** were as follow: Guppies: 1, 2 and 3, M. Laycock (Sheffield). Mollies: 1 and 2, J. S. Hall (Aireborough); 3, J. M. Bower (Sherwood). Platies: 1, G. Kaye (Top Ten); 2, P. Spittalhouse (Worksop); 3, Mr. and Mrs. Copley (Doncaster). Swordtails: 1, M. H. Marshalsea (Oldham); 2 and 3, Mr. and Mrs. Beckenham (Oldham). Class winner: J. S. Hall. Small Gouramies: 1, Mr. and Mrs. Gates (Castlefoed); 2, J. S. Hall (Aireborough); 3, Mr. and Mrs. Stone (Chesterfield). A.O.V.: 1, Mr. and Mrs. Blades (Cresswell); 2, W. Day (North Staffs); 3, J. S. Hall (Aireborough). Fighters: 1, S. A. Holland (Sunnybeow); 2, C. Spittalhouse (Worksop); 3, Clark Bros. (North Staffs.). Class Winner: Mr. and Mrs. Blades. Large Characins: 1, T. Smith (Sheffield); 2, D. Green (Nelson); 3, K. Askers (North Staffs.). Small Characins: 1, Mr. and Mrs. Williams (North Staffs.); 2, Mr. and Mrs. Blades (Cresswell); 3, F. Robinson (Four Star). Class Winner: T. Smith. Tropical Freshwater: 1, Mr. and Mrs. Batchelor (Loyne); 2, Mr. and Mrs. Kilvington (Doncaster); 3, J. S. Hall (Aireborough). Tropical Marine: 1, 2 and 3, J. Igoe (Sherwood). Class Winner: Mr. and Mrs. Batchelor. Corydoras: 1, Mr. and Mrs. Waring (Lytham); 2 and 3, K. Brunt (North Staffs.). Loaches: 1, M. H. Marshalsea (Oldham); 2, Mr. and Mrs. Batchelor (Loyne); 3, Mr. and Mrs. Norris (Oldham). A.O.V.: 1, Mr. and Mrs. Copley (Doncaster); 2, T. Smith (Sheffield); 3, L. Kaye (Top Ten). Class Winner: Mr. and Mrs. Waring. Mini Jars: 1, C. Thorn (Northwich); 2 and 3, Mr. and Mrs. Gabe (Chesterfield). Class Winner: L. Thorn. Breeders and Teams (Egglayers): 1, J. Lee (Independent); 2, Mr. and Mrs. Toyne (Sheffield); 3, Mr. and Mrs. Parkin (Independent). Breeders and Teams (Livebearers): 1, J. Igoe (Sherwood); 2, Mr. and Mrs. Toyne (Sheffield); 3, Mr. and Mrs. Daines (Doncaster). Class Winner: J. Igoe. Small Barbs: 1, Mr. and Mrs. Jowle (Derby); 2, J. Gullane (Buxton); 3, J. Snowden (York and District). Large Barbs: 1, T. Smith (Sheffield); 2, C. Goodman (Oldham); 3, Mr. and Mrs. Dains (Doncaster). Class Winner: Mr. and Mrs. Jowle. Angels: 1, Mr. and Mrs. Davison (Gainsborough); 2, A. S. Turner (Glossop); 3, Mrs. Berry (Valley). Dwarf: 1, L. Thorn (Northwich); 2, Mr. and Mrs. Gates (Castlefoed); 3, R. Holmes (Derby Regent). A.O.V.: 1 and 3, J. Gullane (Buxton); 2, Mr. and Mrs. Gilding (Gainsborough). Best in Class: L. Thorn (Northwich), also Best Fish in Show. Killiefish: 1, Mr. and Mrs. Lofthouse (B.K.A.); 2, Mr. and Mrs. Blades (Cresswell); 3, J. Lee (Independent). Sharks and Labeos: 1, J. Gullane (Buxton); 2, J. S. Hall (Aireborough); 3, R. Harlow (Derby Regent). Rasboras, Danios and White Clouds: 1, Mr. and Mrs. Gilding (Gainsborough); 2, T. Smith (Sheffield); 3, Mr. and Mrs. Dains (Doncaster). Class Winner: J. Gullane. Pairs (Egglayers): 1, M. H. Marshalsea (Oldham); 2, Mr. and Mrs. Batchelor (Loyns); 3, Mr. and Mrs. Davison (Gainsborough). Pairs (Livebearers): 1, J. Snowdon (York and District); 2, Mr. and Mrs. Holmes (Welbeck); 3, G. Kaye (Top Ten). Best in Class: J. Snowdon. Common Goldfish: 1, Mr. and Mrs. Brearley (Belle Vue); 2, J. M. Bower (Sherwood); 3, J. S. Hall (Aireborough). Fancy Goldfish: 1, 2 and 3, J. S. Hall (Aireborough). A.O.V.: 1 and 2, E. C. Harris (Nelson); 3, Clark Bros. (North Staffs.). Best in Class: J. S. Hall. Furnished Aquaria: L. Thorn (Northwich). Society with most points: Aireborough.

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OFFICERS elected at the **Wrexham Tropical Fish Society** annual general meeting were: Chairman, J. M. D'Arcy; secretary, C. Pritchard, "Cregnoith," Middle Road, Nant Coedpoeth, near Wrexham; treasurer, Mrs. V. Oliver; committee members, librarian, E. Jones, Miss C. Jones, T. Pound, A. Stevenson and C. Daniels. A talk and demonstration on furnished jars was given by Mrs. V. Oliver and was followed by slides taken by members of the society. Meetings are held on the second and last Thursday of the month at the Fellowship Hall, Bradley Road, Wrexham, and all are welcome.

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THE October meeting of **SPASS** followed the lines of a lively discussion mainly about the club's activities of the current year, and with a few suggestions for further activities in 1973. The society had a very interesting visit to the Bristol A.S. Open Show and it was suggested that there be a similar visit to the Manchester Open Show, but this had been left a little late to organise this efficiently so definite plans have been made to make this journey next year.

A Memorial Trophy was suggested for R. Dudley and this was unanimously passed with plans to go ahead for this trophy to be awarded to the Novices Class, a section new to SPASS but very dear to Mr. Dudley's keen interest in this section of the club. The next meeting will be held on the 19th December, 8 p.m. at the St. Mark's Hall, Compton Road, S.W.19, where friends old and new will be made very welcome.

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IN October **Bracknell A.S.** held their annual general meeting and the following officers were elected: President and Vice-President, K. and Joyce Roberts; chairman, L. Little; vice-chairman, G. Warwick; secretary, T. Cockett, 15 The Larches, Warfield Park, Bracknell. Phone Winkfield Row 4596; treasurer, K. Phillips; show secretary, J. Horsey. Meetings are held on the second and fourth Mondays in the month at The Admiral Cunningham, Bracknell. New members welcome.

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THE **Association of Southern Aquarist Societies'** annual "Fish of A.S.A.S." show was held at Salisbury in October and attracted 225 entries from the ten member clubs.

The Salisbury Bowl for Best Barb was won by Mr. Holmes (Havant) with a Cherry Barb; the Bournemouth Cup for Best Characin went to Mr. Sparshat (Havant) with a Blind Cave-fish; the Portsmouth Rosebowl for Best Cichlid went to Mr. Willis (Portsmouth) with an Apistogramma Agassizi; the Yeovil Cup for Best Common Goldfish was won by Mr. Coombes (Bournemouth), and the Havant Trophy for Best Danio went to Mr. Holmes (Havant) with a Leopard Danio. The Ringwood Shield for the Champion A.S.A.S. club was won by Salisbury, and the "Fish of A.S.A.S." tankard was awarded to the Blind Cave-fish entered by Mr. Sparshat—his second such trophy.

During judging, a very interesting lecture on "Food fishes eat in Nature" was given by Mr. T. Gledhill, of Fresh Water Biological Association, Dorset. The A.S.A.S. Quiz Grand Challenge Shield was won by Havant, who narrowly defeated Bournemouth.

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AT the **Alfreton and District A.S.** annual general meeting Mrs. Lindley resigned as president. S. Dooley was elected as president

and is also treasurer. S. Hill is secretary, with M. Footitt chairman, and B. Hickling is show secretary. Other members of the committee are P. Bonner, R. Brookes, K. Dean, M. Merry, M. Smedley and J. Wright.

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THE **Grimwood A.S.** held its first open show early in September. Although only two years old the club undertook the staging of an open show to prove that there were tropical and coldwater fish of as high a standard in Skelmersdale and the surrounding areas as there is in the more famous fishkeeping areas of the North West. Trophies and prize cards were presented by Councillor D. Sterle, vice-chairman of Skelmersdale and Holland U.D.C. Guppies: 1 and 3, H. Ormesher (Sandgrounders); 2, M. Laycock (Sheffield). Mollies: 1 and 2, M. Swain (Grimwood)—(Section winner); 3, W. S. Rogers (Grimwood). Swordtails: 1, J. Colligan (Grimwood); 2, C. Beckenham (Oldham); 3, H. R. Sephton (Grimwood). Platies: 1, A. Waterhouse (Sandgrounders); 2, H. Ormesher (Sandgrounders); 3, C. Norton (Sandgrounders). Anabantids: 1, B. Carter (Merseyside); 2 and 3, Mr. and Mrs. Cohen (Castleford). Fighters: 1, Mr. and Mrs. Toyne (Sheffield)—(Section winner); 2, Mr. and Mrs. Thorne (Northwich); 3, Mr. and Mrs. Cohen (Castleford). Small Barbs: 1, Mr. and Mrs. Cohen (Castleford); 2, D. Charlton (Merseyside); 3, B. Wilson (Merseyside). Large Barbs: 1, Mr. and Mrs. Cohen (Castleford)—(Section winner); 2, C. Beckenham (Oldham); 3, R. Clift (Sandgrounders). Dwarf Cichlids: 1 and 2, M. Teotman (Bolton); 3, B. Carter (Merseyside). Large Cichlids: 1, Mr. Norton (Sandgrounders); 2, Mr. and Mrs. Thorne (Northwich); 3, H. Ormesher (Sandgrounders). Angels: 1, L. Pinch (Sandgrounders)—(Section winner); 2, H. Sephton (Grimwood); 3, Mr. and Mrs. Toyne (Sheffield). Small Characins: 1, R. I. Payne (Merseyside); 2, H. Marshalsea (Oldham); 3, Mr. and Mrs. Trotman (Bolton). Large Characins: 1, D. Charlton (Merseyside)—(Section winner); 2, M. Swain (Grimwood); 3, H. Marshalsea (Oldham). Rasboras: 1, 2 and 3, D. Charlton (Merseyside)—(Section winner). Danios and Minnows: 1, Mr. and Mrs. Toyne (Sheffield); 2, T. Smith (Sheffield); 3, B. Wilson (Merseyside). Sharks: 1, Mr. Payne (Merseyside); 2, B. Carter (Sandgrounders); 3, T. Smith (Sheffield). Foxes: 1, Mr. and Mrs. Cohen (Castleford); 2, Mr. Payne (Merseyside); 3, B. Wilson (Merseyside). Toothcarps: 1, T. Smith (Sheffield)—(Section winner); 2, Mr. and Mrs. Thorne (Northwich); 3, K. Wright (Sandgrounders). Corydoras Catfish: 1, Mr. and Mrs. Trotman (Bolton); 2, R. I. Payne (Merseyside); 3, L. Pinch (Sandgrounders). A.O.V. Catfish: 1, D. Charlton (Merseyside)—(Section winner); 2, P. Ground (Sandgrounders); 3, T. Smith (Sheffield). Loaches: 1, C. Beckenham (Oldham); 2, Mr. Norton (Sandgrounders); 3, T. Smith (Sheffield). Breeders (Egglayers): 1, Mr. and Mrs. Cohen (Castleford)—(Section winner); 2, Mr. and Mrs. Thorne (Northwich); 3, B. Carter (Sandgrounders). Breeders (Livebearers): 1, Mr. and Mrs. Toyne (Sheffield); 2, R. Clift (Sandgrounders); 3, Mr. and Mrs. Tasker (Sandgrounders). Pairs (Egglayers): 1, D. Charlton (Merseyside)—(Section winner); 2, P. Downham (Sandgrounders); 3, Mr. and Mrs. Thorne (Northwich). Pairs (Livebearers): 1, W. Trotman (Bolton); 2, Mr. Norton (Sandgrounders); 3, H. Ormesher (Sandgrounders). Fancy Goldfish: 1, Mrs. Jenkins (Merseyside); 2, A. Wilcock (Grimwood); 3, Mr. and Mrs. Toyne (Sheffield). Common Goldfish: 1, and 2 Mr. and Mrs. Toyne (Sheffield); 3, Mr. and Mrs. Thorne (Northwich). A.O.V. Coldwater: 1, Mr. and Mrs. Toyne (Sheffield)—(Section winner); 2, R. Atherton (Grimwood); 3, R. Millinger (Grimwood). A.O.V. Tropical: 1, P. Downham (Sandgrounders)—(Section winner); 2, M. Swain (Grimwood); 3, R. Clift (Sandgrounders). Best in Show: T. Smith (Sheffield).

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THE inter-club show between the **Thanet A.S.** and **Deal A.S.** was held in October and attracted 73 entries. Best fish in show was won by Mr. Dykes of Deal A.S. Other results: A.O.V.: 1, Mr. Dykes (Deal); 2 and 3, B. Lawrence (Deal). Characins: 1, R. Reeve (Deal); 2, Mr. Rook (Thanet); 3, Mr. Hooper (Deal). Rasboras and Danios: 1, Mr. Rook (Thanet); 2, Mr. Porter (Thanet); 3, R. Dykes (Deal). Livebearers: 1 and 2, Mr. Twyman (Thanet); 3, Mrs. V. Rook (Thanet). Cichlids: 1, Mr. Lovegrove (Thanet); 2, C. Turner (Deal); 3, R. Rook (Thanet). Barbs: 1, R. Rook (Thanet); 2, Mrs. V. Rook (Thanet); 3, R. Pocock (Thanet). The inter-club shield was retained by Thanet A.S. for best overall results.

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RESULTS of the **Cardiff A.S.** annual show were as follows: Class B: 1, 2 and 4, W. Limbrick; 3, R. Hyett. Class G: 1, C. Harding; 2, R. Hyett; 3, R. Newton; 4, D. Warmeant. Class CA: 1, C. Harding; 2, R. Daws; 3, J. Isidoro; 4, W. Limbrick, R. Daws, C. Harding. Class D: 1, W. Gibbon; 2, C. Morrison; 3, R. Daws; 4, R. Newton. Class DA: 1, N. Gray; 2, G. Harris; 3, J. Edwards; 4, R. Newton. Class DB: 1, W. Limbrick; 2, R. Hyett; 3, D. Warmeant; 4, N. Gray. Class E: 1, N. Gray; 2 and 4, F. Sutherwood; 3, J. Pick. Class EA: 1, C. Turner; 2, C. Morrison; 3, C. Harding; 4, W. Limbrick. Class F: 1, 3 and 4, G. Churchcill; 2, M. Addicott. Class G: 1, W. Limbrick; 2 and 4, N. Gray; 3, C. Harding. Class H: 1, C. Haeding; 2, C. Scrivin; 3, V. Baker; 4, D. Egan. Class I: 1, 2 and 4, N. Gray; 3, I. Comb's. Class J: 1, N. Gray; 2, R. Newton; 3, W. Limbrick; 4, C. Harding. Class K: 1, W. Limbrick; 2, J. Egan; 3, J. Edwards; 4, D. Egan. Class L: 1, R. Newton; 2, W. Sims; 3 and 4, N. Gray. Class M: 1, C. Box; 2, D. Warmeant; 3, N. Gray. Class N: 1, W. Sims; 2, V. Baker; 3, N. Gray; 4, D. Warmeant. Class O: 1, C. Morrison; 2, P. Thomas; 3, J. Cilia; 4, C. Scrivin. Class P: 1, P. Greenwood; 2 and 4, J. Edwards; 3, J. Egan. Class Q: 1, C. Scrivin; 2, J. Cilia; 3, V. Baker; 4, T. Click. Class R: 1, D. Richards; 2, D. Egan; 3, V. Baker; 4, K. Smith. Class S: 1 and 2, N. Gray; 3, D. Egan; 4, K. Smith. Class W: 1, 2 and 3, C. Rupert; 4, D. Warmeant. Class X-OT: 1, N. Gray; 2, C. Turner; 3, C. Harding. Class X-BM: 1 and 3, C. Harding; 2 and 4, F. Sutherwood. Best Fish in Show: C. Harding. Most points in Show: Master N. Gray.

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THE annual general meeting of the **Bury and District A.S.**, held in October, marked the 21st anniversary of the formation of the society. Chairman, H. Cooper; secretary, D. Molineaux, 3 Southfield Road, Holcombe Brook, Ramsbottom, BL0 9ST, and treasurer, T. Haedman, were re-elected and no difficulty was experienced in filling the minor offices.

The Table Show attracted 38 entries which, considering the two main classes were for pairs and breeders' teams, promises well for the society's continued policy of encouraging members to breed and rear their own fish. The Wardle Trophy, awarded for the highest number of points gained during the year, went to Mr. and Mrs. A. Brown and other trophies, won month by month throughout the year, were also presented. A 7,000 word history covering the twenty-one years has been compiled and produced entirely from the society's own resources and a copy was presented to each member. Copies will also be sent out to neighbouring societies in due course.

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AT the September meeting of the **Dunmow and District A.S.** a very interesting talk was given on the breeding and rearing of Discus by M. Pearson of East London. While this was in progress the first table show of the season, which was for Livebearers, was judged by R. Dodkins. The winners were as follow: 1, T. Gurst; 2, C. De-Craze; 3, Mrs. B. Andrews; 4, M. Green.

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RESULTS of the **Goldfish Society of Great Britain** Open Show: Singletails: 1 and 2, D. Morris; 3, L. Roberts; 4, Mr. Cowley. Veiltails: 1 and 2, S. Tibble; 3, D. Morris; 4, W. Cook. Globe-eyes: 1, 2, 3 and 4, B. Herbert. Bramblcheads: 1, D. Morris; 2 and 4, R. Whittington; 3, A. Lawman. Pearlscales: 1, P. Kadwell; 2, T. Halpin; 3 and 4, P. Whittington. Celestials: 1 and 3, P. Kadwell; 2, J. Smith; 4, Mr. and Mrs. Bellamy. Pom-Poms: 1, T. Halpin; 2, J. Bundell. Bubble-eyes: 1, 2 and 4, K. Speaks; 3, Mr. and Mrs. Bellamy. Common Goldfish: 1, A. Law; 2, H. Brakes; 3, P. Whittington; 4, B. Young. London Shubunkins: 1, 2, 3 and 4: P. Whittington. Comet: 1, Mr. and Mrs. Bellamy. Fantail: 1, K. Speaks; 2 and 3, B. Herbert; 4, S. Tibble. Orandas: 1, P. Kadwell; 2, Mr. Cowley; 3, R. Whittington; 4, J. Smith. Broadtail Moor: 1 and 3, M. and D. Dudley; 2, W. Cook. *Breeders:* Singletails: 1, 3 and 4, D. Morris; 2, R. Whittington. Veiltails: 1, T. Halpin; 2 and 4, S. Tibble; 3, P. Kadwell. Globe-eyes: 1 and 3, B. Herbert; 2, S. Tibble. Pearlscales: 1 and 2, M. Dudley. London Shubunkins: 1, 2 and 3, P. Whittington; 4, G. King. Fantails: 1 and 2, B. Herbert; 3, G. Strutt; 4, L. Roberts. Orandas: 1 and 2, A. Lawman. Best Fish in Show: A. Law (Aquarist Gold Pin). Judges: M. Close, G. O'Neill, L. Emery, R. Eason, C. A. T. Brown. At the above open show a record number of fish were on show. A new venture was a photographic section which was very well supported.

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AT the October meeting of the **Northwich and District A.S.** a lecture was given by Ray Young (Chairman F.G.A.) with a slide show presented by Dr. Alan Clarke (Treasurer F.G.A.) of the Manchester Section of the F.G.A. An interesting discussion on the feeding, line breeding and standards of the F.G.A. Table Show results: Large Cichlids: 1, L. and D. Thorne; 2, C. and K. Davies; 3, L. Bradley. Small Cichlids: 1, L. and D. Thorne (Fish of the Month Trophy winner); 2, B. Connelly; 3, L. Bradley. Breeders Egglayers: 1, L. and D. Thorne; 2, T. Phillips; 3, L. Bradley.

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RESULTS of first Open Show of **Hinckley and District A.S.** were as follow: Best Fish in Show: B. and F. Hirst. Best Coldwater: G. and S. Best Barb: D. White. Best Cichlid: M. Stringer. Best Anabantid: Mrs. Mustin. Society with most entries: Nuneaton. Society with most points: Bedworth. Best junior with most points: Master Freeman. Individual points: J. Goodman. Individual entries: G. and S. Class awards: Loach: 1, Mr. Salisbury; 2, I. Shipley; 3, D. White; 4, B. Baxter. Danios: 1 and 3, D. Barnet; 2, G. and S.; 4, J. Goodman. Siamese Fighters: 1, Mr. Thomas; 2, B. A. Faulkney; 3, J. Goodman; 4, S. Hartwell. A.O.V. Anabantid: 1, Mrs. Mustin; 2, P. Hutt; 3, Mr. Salisbury; 4, Mr. Taylor. A.O.V. Tropical: 1, T. Parry; 2, A. and S. Jeffs; 3, Mr. Hunter; 4, Mr. Wilkins. Pedigree Single Tail Goldfish: 1, G. and S.; 2, A. and S. Jeffs; 3, C. Mustin; 4, Mr. Salisbury. Killies: 1 and 4, B. and F. Hirst; 2, B. A. Faulkney; 3, Mr. and Mrs. Hall. A.O.V. Cichlid: 1, Mr. Stringer; 2, Mr. Bates; 3, S. Harrwell; 4, Mr. Wilkins. Guppy: 1 and 4, S. Harrwell; 2, B. A. Faulkney; 3, Mr. Hill. Pedigree Twin-tailed Goldfish: 1, R. and R. Commander; 2 and 3, R. Shakespere; 4, A. and S. Jeffs. A.O.V. Barbs: 1, D. White; 2 and 3, K. Bates; 4, J. and B. Roberts. Small Barbs: 1, Mr. and Mrs. Lee; 2, Mr. and Mrs. Aucott; 3, B. and F. Hirst; 4, K. and J. Bates. Rasboras: 1, Mr. and Mrs. Cox; 2, Mrs. Taylor; 3, Mrs. Stringer; 4, Mrs. Barnet. Catfish: 1, Mr. Lindsey; 2, J. Goodman; 3, Mr. and Mrs. Aucott; 4, G. and S. A.O.V. Catfish: 1, T. Parry; 2, Mr. Salisbury; 3, Mr. Taylor; 4, Mr. Thomas. Egglayer (Pairs): 1, A. and S. Jeffs; 2, P. and A. Hutt; 3 and 4, Mr. Goodman. Livebearer (Pairs): 1, Mr. Wilkins; 2, Mr. and Mrs. Lee; 3, B. and F. Hirst; 4, J. Goodman. Egglayer (Broods): 1, Mr. Salisbury; 2, Mr. Freeman; 3, Mr. Lindsey; 4, Mr. Goodman. Livebearer (Broods): 1, Mr. Goodman; 2, J. and L. Smith; 3, J. Goodman; 4, K. and J. Bates. Junior A.V. Tropical: 1 and 2, Master Freeman; 3, C. Mustin; 4, Master Brookhouse. Cichlids: 1, Mr. Thomas; 2, S. and S. Hall; 3 and 4, G. and S. Characins: 1, Mr. and Mrs. Aucott; 2, S. Hartwell; 3, G. and S.; 4, K. Pratt. A.O.V. Livebearer (Pairs): 1, Mr. Salisbury; 2 and 4, Mr. White; 3, Mr. and Mrs. Aucott.

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THE October meeting of the **Keighley A.S.** was the Annual Members Show. The results

were as follow: Livebearers: 1, Mr. Ibbotson; 2, Mrs. Emmott; 3, Mrs. Heap. Characins: 1 and 3, D. Mosley; 2, Mr. Hart. A.V. Breeders: 1, Mrs. Gear; 2, J. Mosley; 3, D. Mosley. A.V. Pairs: 1, Mrs. Gear; 2, J. Mosley; 3, Mrs. Gear. Barbs: 1, Mr. Hart; 2, Mr. Ibbotson; 3, Mr. Hart. Anabantids: 1, J. Mosley; 2, Mr. Ibbotson; 3, Mr. Heap. A.O.V.: 1, J. Mosley; 2, Mr. Sagar; 3, Mr. Lydon. Juniors: 1 and 3, Master Hollingsworth; 2, Miss Sagar. Toothcarps: 1, Mrs. Gear; 2 and 3, J. Mosley. Coldwater: 1 and 2, D. Mosley; 3, Mr. Jones. Carps and Minnows: 1, Mr. Hart; 2, Mr. Ibbotson; 3, Mrs. Heap. Catfish and Loach: 1, Mr. Price; 2, J. Mosley; 3, Mr. Jackson. Cichlids: 1, Mr. Taylor; 2 and 3, D. Mosley. Mrs. O. Taylor devised a quiz which was won by D. Mosley. The fish were judged by Mr. Cherry of Grassington. The Best in Show trophy was won by Mrs. Gear, the Best Junior trophy by Master Jones.

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ENTRIES for the **Barnsley T.F.S.** Annual Open Show were 571, which is the highest yet. Results: Annual Trophy Winners: Best Livebearer: M. Laycock (Sheffield). Best Characin: Mrs. Blades (Creswell). Best Cichlid: J. Dernie (Dukeries). Best Barb: Mrs. Rhodes (Four Star). Best Catfish: Mr. and Mrs. Shipley (Goole). Best Anabantid: Mr. and Mrs. Toyne (Sheffield). Best Shark or Fox: A. Corchin (Swillington). Breeders Egglayer: A. Corchin (Swillington). Breeders Livebearer: Simpson and Horsefield (Barnsley). Best Pair: P. Spittlehouse (Worksop). Best A.O.V.: G. Thickbroom (Welbeck). Best Coldwater: J. S. Hall (Aireborough). Ladies' Trophy: Mrs. M. Shipley (Goole). Best Fish in Show: J. Dernie (Dukeries). Guppies: 1 and 3, M. Laycock (Sheffield); 2, Mr. and Mrs. A. D. Stephens (Castleford). Platies: 1, Mrs. Snowden (York); 2, Mr. and Mrs. Gates (Castleford); 3, P. Walker (Barnsley). Swordtails: 1, Mrs. B. Batch (Hull); 2, G. Andrews (Hull); 3, J. Dernie (Dukeries). Mollies: 1, J. S. Hall (Aireborough); 2, Miss D. Stephens (Castleford); 3, D. Stead (Swillington). A.O.V. Livebearer: 1, J. S. Hall (Aireborough); 2, Mr. and Mrs. J. Dickenson (Castleford); 3, P. Reynolds (Swillington). Small Characins: 1, Mrs. Blades (Creswell); 2, Mr. Pearson (Worksop); 3, Mrs. Rhodes (Four Star). A.O.V. Characins: 1, Mr. and Mrs. Scarll (Goole); 2, Miss S. Clarke (Barnsley); 3, A. Batch (Hull). Dwarf Cichlids: 1 and 3, J. Dernie (Dukeries); 2, M. and W. Hilsup (Swillington). Angels: 1, Miss A. Gregory (Nelson); 2, Mrs. Blades (Creswell); 3, Miss S. Clarke (Barnsley). A.O.V. Cichlids: 1, D. and R. Standen (Loyne); 2, Mr. and Mrs. Gates (Castleford); 3, L. S. Hunter (York). Small Barbs: 1, Mrs. Rhodes (Four Star); 2, J. Dernie (Dukeries); 3, Mr. and Mrs. Cohen (Castleford). A.O.V. Barbs: 1, Mr. and Mrs. Cohen (Castleford); 2, L. S. Hunter (York); 3, T. Smith (Sheffield). Corydoras: 1, Mr. and Mrs. Clarke (Barnsley); 2, G. Hoyland (Don Valley); 3, M. Buxton (Sheffield). Loaches and Botia: 1, Mr. Pearson (Worksop); 2, P. Walker (Barnsley); 3, Master D. Greenwood (Nelson). A.O.V. Catfish: 1, Mr. and Mrs. Shipley (Goole); 2, Mr. and Mrs. Kilvington (Doncaster); 3, T. Smith (Sheffield). S. Fighters: 1 and 2, Mr. and Mrs. Toyne (Sheffield); 3, Mr. and Mrs. A. D. Stephens (Castleford). A.O.V. Anabantid: 1, Mrs. Blades (Creswell); 2 and 3, J. S. Hall (Aireborough). Danio, Rasbora and Minnows: 1, T. Smith (Sheffield); 2, J. Stephens (Castleford); 3, Mr. and Mrs. Gates (Castleford). Sharks and Foxes: 1, N. Turner (Mixenden); 2, J. S. Hall (Aireborough); 3, Mr. and Mrs. Gates (Castleford). Killifish, Top Spawners: 1, A. Corchin (Swillington); 2, L. and P. Graham (Loyne); 3, D. Weathers (Ebor). Killifish: 1, T. Smith (Sheffield); 2, A. Corchin (Swillington); 3, Mr. and Mrs. Toyne (Sheffield). Breeders Egglayers: 1 and 3, A. Corchin (Swillington); 2, Mr. and Mrs. Linstead (Four Star). Breeders Livebearers: 1, Simpson and Horsefield (Barnsley); 2, Mr. and Mrs. Toyne (Sheffield); 3, Mr. and Mrs. Cohen (Castleford). Pairs Egglayer: 1, P. Spittlehouse (Worksop); 2 and 3, A. Corchin (Swillington). Pairs Livebearers: 1, G. Andrews (Hull); 2, D. Weathers (Ebor); 3, W. Hislop (Swillington). A.O.V. Tropical: 1, G. Thickbroom (Welbeck); 2, Mr. and Mrs. Kilvington (Doncaster); 3, A. Batch (Hull). Goldfish Common: 1 and 3, J. S. Hall (Aireborough); 2, Mr. and Mrs. B. Foster (Creswell). Goldfish Fancy: 1, 2 and 3, J. S. Hall (Aireborough). A.O.V. Coldwater: 1, 2 and 3, J. S. Hall (Aireborough). Juniors A.V.: 1, Miss M. Thickbroom (Welbeck); 2, Miss S. Clarke (Barnsley); 3, Master W. Dickenson (Castleford). Ladies A.V.: 1, Mrs. M. Shipley (Goole); 2, Mrs. M. Rees (Independant); 3, Mrs. Rhodes (Four Star).

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THE results of the October show of the **Dudley and District A.S.** were as follow: Barbs: 1, J. Croft; 2, 3 and 4, J. Goodman. Barbs, Novice: 1, J. Millard. Pairs: 1 and 4, W. Hickman; 2, J. Croft; 3, J. Goodman. Pairs, Novice: 1 and 2, S. Cartwright; 3, M. Beckingham; 4, D. Price. Livebearers: 1 and 4, J. Goodman; 2, W. Hickman; 3, G. Brockhouse. Livebearers, Novice: 1 and 3, S. Cartwright; 2, R. Shakespeare; 4, C. James. Best Fish in Show: S. Cartwright with Australian Rainbows. The fish were judged by D. H. Johnstone of Smethwick.

We regret that owing to pressure on space some reports have been held over. The show results of Weymouth A.S. and Hounslow and District A.S. will be published in January issue.

VENUE change. **Havant and District A.S.** The new venue is St. Thomas's Church Hall, Belmont Grove, Bedhampton, Havant, and the evenings are fortnightly on Wednesday. Recent talks have been very informative, especially those by Frank Willis on how he has bred Discus successfully, and John Lamboll on biological filtration.

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NEW SOCIETIES

A new society was formed recently, to be known as the **Darfield and District A.S.** Meetings will take place at fortnightly intervals at the Rising Sun Inn, Darfield. New members will be made most welcome. Officials are as follow: Chairman, B. Molyeoux; secretary, B. Marshall, 36 Snape Hill Road, Darfield; treasurer, Mr. Varley.

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In Shrewsbury a new society has been formed. The club name is the **Severn Side Ichthyological Society.** Meetings are held on alternate Fridays (December 1st—15th) in the Labour Club, Abbey Foregate, Shrewsbury, at 8 p.m. There have already been lectures on marine fish, Barbs, Malawi Cichlids, and judging, also a trip to Belle Vue fish exhibition. Anyone wishing to come to club meetings will be made welcome. For further information please contact club secretary M. S. Pinches, 3 St. Julians Friars, Shrewsbury.

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The first meeting of the newly formed **Redcar A.S.** was held at the Stockton Hotel on Thursday, the 2nd November. The meetings will be held on alternate Thursday nights. New members and guests will be made welcome at any meeting. Secretary: Derek Nagle, 59 Charlotte Street, Redcar, Teesside. Tel. Redcar 2594 (during shop hours).

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Wisbech: Any aquarists in this area who are interested in forming a club would they please contact C. R. Edwards, 11 Nelson Gardens, Wisbech, Cambs., PE13 2BW.

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SECRETARY CHANGES

Chingford and District A.S.: Secretary: D. Kaye, 2 Soham Road, Enfield, Middlesex. Tel.: 01-97 37795. Show Secretary: D. Bryant, 14 Eatons Mead, Chingford, London, E.4.

Wrexham Tropical F.S.: C. Pritchard, "Cregneish", Middle Road, Nant Coedpoeth, near Wrexham.

Gloucester Fishkeeping and Social Club: John B. Adlam, 21 Morpeth Street, Tredworth, Gloucester.

Sandgrounds A.S.: S. Hooton, 51 Radnor Drive, Southport.

Bolton Tropical Fish Club: N. Barlow, 76 Mornington Road, Bolton, BL1 4EF.

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AQUARIST CALENDAR

1972

3rd December: Horsforth A.S. Third Open Show at the New Civic Hall, Bradford Road, Stanningley, Pudsey. Schedules from the hon. show secretary, Miss Helm, 29 Wellington Road, New Wortley, Leeds, 12. Phone Leeds 21025.

8th December: Uxbridge and District A.S. Dance and Social at Sports and Social Club, G.P.O. Motor Repair Workshops, Willow Tree Lane, Yeading, Hayes, Middlesex. Admission £1. Supper, spot prizes, raffles, etc. Tickets from N. V. Lee, 46 Airedale Road, Ealing, London, W5 4SD.

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18th February: Rotherham and District A.S. Fourth Open Show at Brinsworth Manor School, Brinsworth Lane, Brinsworth. Details from Secretary, Mrs. J. Airton, 9 Bent Lathes Avenue, Rotherham, Yorks S60 4BL.

25th March: Nelson A.S. Annual Open Show at the Civic Centre, Stanley Street, Nelson.

1st April: Houghton and District A.S. Further details available later.

8th April: Warrington A.S. Open Show. F.N.A.S. rules. Venue later. Show Secretary: J. Higham, 42 Hood Lane, Sankey, Warrington, Lancashire. Tel.: 36939.

14th April: Independent A.S. Open Show will be held at the Public Hall, Islington Town Hall, Upper Street, Islington, N.1.

15th April: Coventry Pool and Aquarium Society Open Show, Foleshill Community Centre, Foleshill Road (A.444), Coventry. Details from Show Secretary, S. Wooldridge, 32 Ridgeway Avenue, Styvedrale, Coventry, or Secretary, C. J. Grant, 26 Cecily Road, Cheylesmore, Coventry.

21st April: Runnymede A.S. Full details later.

6th May: Oxran A.S. Open Show will be held in the Oxran Recreation Hall, Refuge Street, Shaw, Oldham.

13th May: The Second Annual Open Show of the Gloucester A.S. will be held at the Gloucester Education and Leisure Centre, Painswick Road. Schedules from the show secretary, Mike Brooks, 114 Melbourne Street, Gloucester, from February on.

13th May: Corby and District A.S. Open Show, at the Corby Civic Centre. F.A.B.A.S. More details later.

13th May: Croydon A.S. Open Show, full details later.

13th May: Derby Regent A.S. Open Show, Sherwood Foresters Recreation Centre (Normanton Barracks), Osmaston Road (A5111), Derby. R.A.C. sign posted. Show Secretary: R. G. Harlow, 180 Mansfield Road, Derby. Tel.: 44322.

19th May: Southend, Leigh and District A.S. Open Show, to be held at St. Clement's Hall Rectory, Grove, Leigh-on-Sea. Schedules available from Show Secretary, D. C. M. Durrant, 172 Trinity Road, Southend-on-Sea, Essex. Tel.: Southend 610576.

20th May: Yeovil and D.A.S. Open Show, the School Hall, Church Street, Marnock, nr. Yeovil. Full details later.

10th June: Lincoln and District A.S. All other details will be announced later.

17th June: Swillington A.S. Annual Open Show will be held at John Smeatons School, off Barwick Road, Leeds, 14.

17th June: Bishops Cleeve A.S. Open Show. Further details later.

17th July: Sandgrounders A.S. third Open Show, Cambridge Hall, Lord Street, Southport.

12th August: North Staffs. A.S.

12th August: Grimsby and Cleethorpes A.S. second Open Show at the Memorial Hall, Cleethorpes. Schedules can be obtained from the Show Secretary, T. P. Walker, 51 Chesire Walk, Willows Estate, Grimsby, Lincs.

9th September: Nuneaton A.S. Sixth Open Show.