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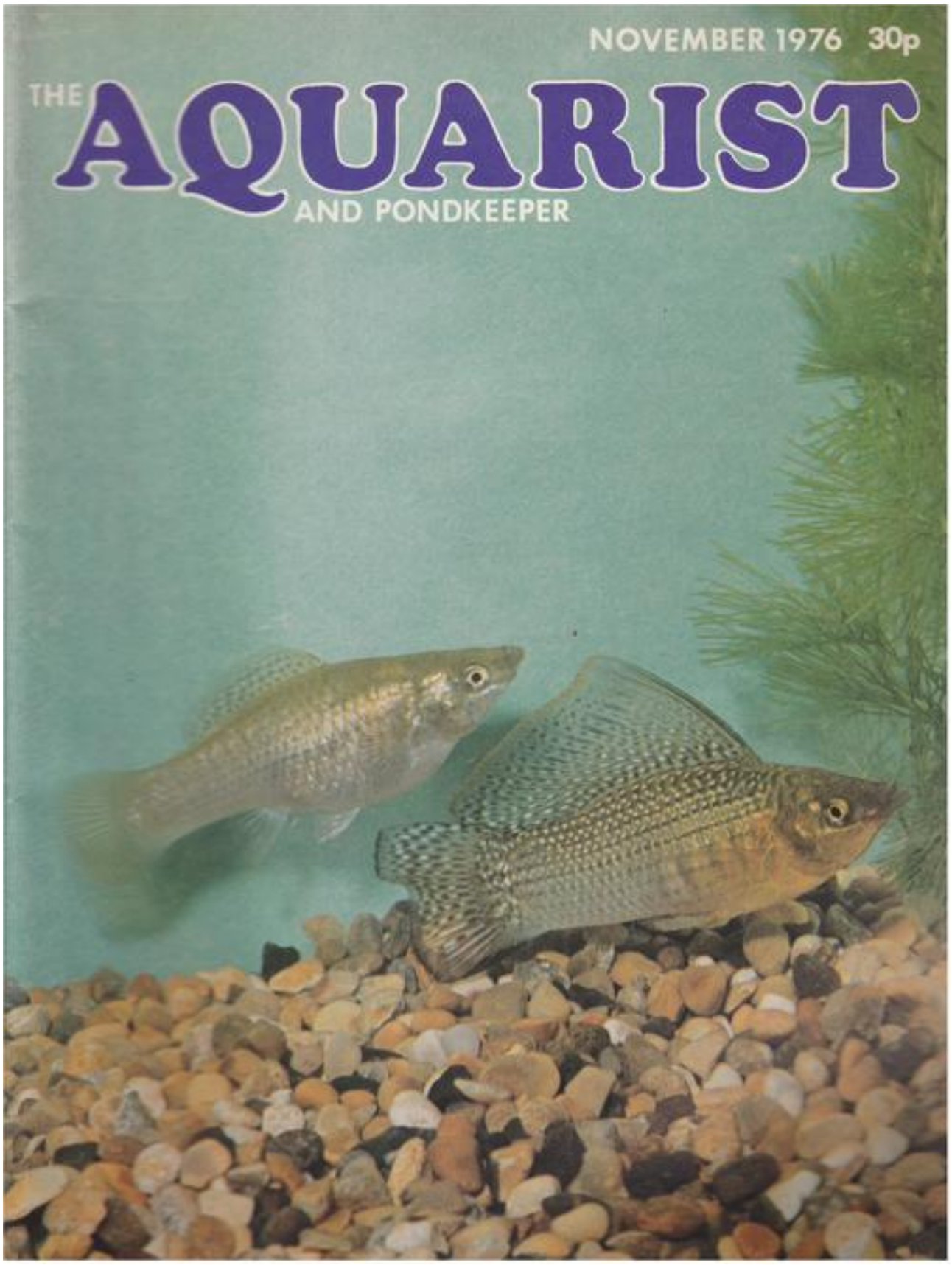
THE AQUARIST AND PONDKEEPER



THE AQUARIST AND PONDKEEPER

The Aquatic Magazine with the Largest Circulation in Great Britain

Published Monthly 30p

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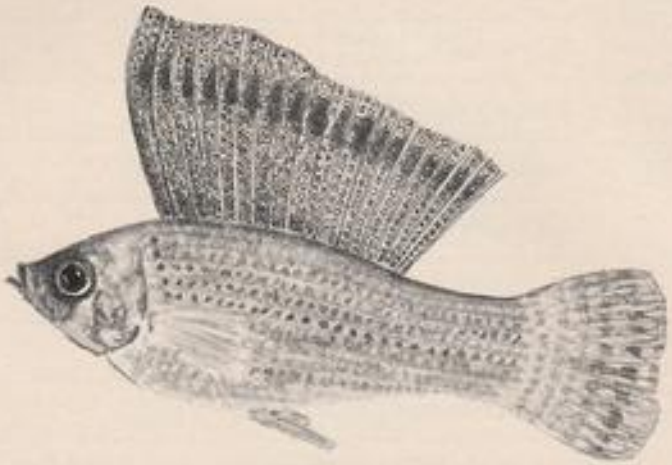
SAIL-FIN MOLLIES

Written & illustrated by Jack Hems

THE MOST characteristic feature of these livebearers, of the family *Poeciliidae*, is the long-based dorsal fin, with more than a dozen rays, and of a shape which may be likened to that of a sail.

Nearly always *P. velifera* and *P. latipinna*, living in the natural state, are variable in coloration. In the main, however, they are olive on the back, shading down to alternating horizontal lines of red and green



There are two species. The more distinctive and less easy of the two to keep and breed in the aquarium is the giant sail-fin (*Poecilia velifera*) from Yucatan. The other species is the mud pusser (*P. latipinna*), with a range extending from the U.S.A. (Virginia, the Carolinas, and thence through Georgia, Florida and the Gulf States) to north-east Mexico. Essentially they are fishes of coastal waters: salt, brackish and fresh.

Prior to 1963, the tribe of mollies was referred to the genus *Mollienisia*. Hence it is not difficult to understand how the eight or more species came by their popular name.

dots. A mother-of-pearl sheen is reflected off the scales, and some yellow to brassy gold colour is evident on the flanks, but more particularly on and about the head. The underparts are silvery.

The enormous dorsal fin of the male *P. velifera* is green with spottings of olive, brown, red, green, grey and red. In *P. latipinna* it is pale blue with spots of darker blue, red, green and black. It is usually edged with yellow. Not all male *P. latipinna* or, for that matter, *P. velifera*, carry tall sail-like fins on their backs, either in the aquarium or in the wild. In not a few specimens the dorsal fin lacks height, which even in *P. latipinna* may attain as

much as 1½ in. from base to upper margin. The caudal fin in both species is handsomely patterned with a pearly hue mixed with shades of blue, yellow, orange or red.

In the captive state, the female *P. velifera* reaches nearly or about 5 in. A length of 6 in. is not uncommon in the wild. Aquarium-bred female *P. latipinna* grow to about 3¾ in. Almost always male fish are shorter in the body and less heavily built than female fish.

The exquisite brilliance of a male sail-fin sparring with another male or displaying before a female is a sight hard to equal among aquarium fishes. Melanistic, grey speckled with black, and albino forms of certain species of molly occur in the natural state and about the middle of the 1920s, or at any rate about the time that Al Capone decided it would be a good plan to have his life insured and stated, with forced humility no doubt, that his occupation was dealing in secondhand furniture, a keen aquarist named William Schaumberg of New Orleans introduced some black sports, collected from the wild, into his tank and began the process of line-breeding and hybridizing.

In course of time, he 'produced the marvellous black fish with a gigantic dorsal fin.' So said the late C. H. Peters in his informative and beautifully illustrated book called *Life and Love in the Aquarium* (Empire Tropical Fish Import, New York, 1934.)

Over the years various colour varieties of sail-fin mollies have appeared on the market: green and black marbled, albino, golden blond, improved blacks with dorsals outlined with vibrant orange and so on. The chief requirements of sail-fin mollies in the aquarium are spacious quarters, warmth (though they can stand, for short duration, a gradual drop to comfortable sitting-room temperature), a bright top light, and generous diet of herbivorous rather than carnivorous food. Therefore more than three meals a day of dried food rich in vegetable matter and live foods in between times, or in place of a packeted meal every so often, is advised. Brine shrimps, *Daphnia*, white worms, gnat larvae, and the like, are eaten avidly. In the natural state mollies are great consumers of mossy algae and other tender green growths. A good substitute for aquatic greenery is cooked spinach. In the absence of this vegetable young nettles or turnip tops will do.

To return to the matter of temperatures, a range of about 75°F (24°C) to 80°F (27°C) is in order. The former end of the scale for general maintenance; the latter to promote greater sexual activity and shorten the period of gestation. Ordinarily a pregnant female may deliver some 80 or more young every couple of months. Sometimes, however, the time-lapse between broods may be much extended. Again, youngish females have larger broods than rather old fish. Furthermore, there is usually a rest period over the winter months. This is the pattern in nature.

A female molly should not be moved or subjected to any shocks while carrying young. Placing a noticeably pregnant female in a breeding trap or small aquarium on her own may result in the delivery of premature fry or the death of the mother fish herself. In short, a pregnant molly is best left undisturbed in the tank she normally occupies with her spouse. If there are plenty of feathery-foliaged plants present and the adult fish are kept well-fed there is little danger of many, if any, of the fry being eaten. Molly fry are quite large at birth and almost right away can take powdered dried food sprinkled on the water.

In the south-east corner of the United States, that is in Florida, everything is in the fish farmers' favour: the right climate for outdoor pools and tanks (though exceptionally Florida does experience some frosty weather), plenty of sun, great carpets of soft algae, growing in the right quality of water, and a plethora of suitable live food. The commercial breeders supplement foods with meal mashes and balanced dried foods.

Such conditions, so suited to mollies, are indeed difficult to imitate over here. Thus hobbyists in this country must accept the fact that sail-fins, especially the more demanding *P. velifera*, will not deliver fry with the regularity, and frequency, associated with, say, guppies or platies. Further, there is no guarantee that male fry will develop dorsal fins quite as tall as those carried by their male parents.

To reiterate a lot of what I have said above, a pair of wild-type *P. latipinna* should be given a well-lighted tank at least 24 in. × 15 in. × 12 in. A 36 in. × 15 in. × 12 in. tank will suffice for a pair of *P. velifera*. The water should be hard, but not unreasonably hard, and inclining to alkalinity. About one teaspoonful of ordinary cooking salt (not table salt with various additivities to prevent clogging), or pure salt crystals, should be added to every gallon of water in the tank. Immediately fry can be sexed, it is recommended that the two sexes are separated and kept apart for the next eight months or so. This separation makes for larger and more sexually potent fish. Even so, sail-fin mollies do not develop their pronounced sexual differences such as the rod-like anal fin of the male before a few or several months are out, and this even when the living is good.

Of necessity, therefore, the sail-fin enthusiast must be blessed with patience.

In general, the wild-type *P. latipinna* is an inoffensive fish and may be introduced into a community tank housing smaller fishes. On the other hand, *P. velifera* can sometimes turn spiteful towards smaller fishes or others of its own kind.

—GUPPIES—

SHAPES AND SYSTEMS

by Jeff Hutchings

PREVIOUS ARTICLES have dealt with the environmental and feeding aspects of guppy keeping. In this one I am going to illustrate some of the guppy shapes available to the enthusiast, and in the second part discuss the procedures involved in setting up a tank system for breeding one strain of guppies.

The general hobbyest usually gets involved with one species of fish at a time when he starts breeding tropical fish and this leads to the following questions having to be answered: how many tanks are required? What size should they be? And probably most important, where can the tanks go? Unlike most egglayers who can be stopped breeding by putting them in a community tank, etc., guppies, as most other livebearers, will breed rapidly in a wide variety of conditions. It is therefore extremely important that adequate tanks are available to enable the sexes to be kept separate and generations to be kept separate, with small tanks to keep breeding pairs in.

In my first article earlier in the year I mentioned there was a variety of finnage shapes found in different strains of guppies. It is prudent at this stage to enlarge upon this and illustrate some of the possible strains which might be bred. Being a member of the Fancy Guppy Association, my thoughts when selecting breeding stock relate first to shape and then to colour and not the other way round.

Undoubtedly the most popular types are the broadtails. It must be appreciated that the finnage shape within this group varies considerably. If one looks at old books and sees photographs of the male guppies produced then one wonders why these fish were raved about at the time. It is not until one sees examples of the original wild guppy that the marvel of the man-created broadtail in its glorious technicolour is appreciated.

Although Standards used for judging vary, there are two basic broadtail types:

Delta

The Delta is a fine robust fish with a triangular shaped caudal, in a good specimen held with the rear edge vertical, the dorsal being rectangular in outline. Sadly it is this shape that has been badly treated. In order to satisfy the demand for large 'commercial' fish the overseas breeders have bred fish with large tails but whose caudal peduncles (the part of the body adjoining the tail) is not thick enough to hold the tail erect.

Veiltail

Where the Delta is angular the veiltail is curvaceous. Basically the veiltail has a curved caudal which is rounded and a concave rear edge. The length of the dorsal is variable.

One must not forget the female. Probably the most well known shape is the Superba. This particular shape is always related to a broadtail male. Improvements in the size of guppy females and the area of colour in the finnage and body have gradually occured over the years and now fish with brightly coloured caudals are seen.

Early work with guppies developed shorttail varieties giving us such standards as: Doublesword, Cofertail and Topsword.

FIG 1.
DELTA.

FIG. 2
VEILTAIL

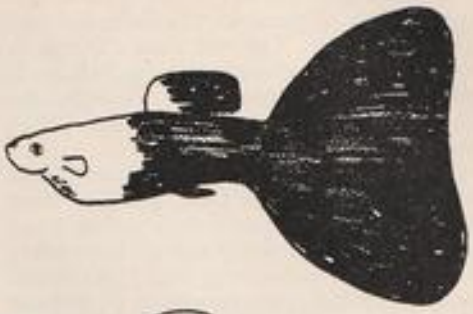


FIG 3.
SUPERBA.

FIG 4.
DOUBLE SWORD.

FIG. 5
COFERTAIL

FIG. 6.
TOPSWORD.

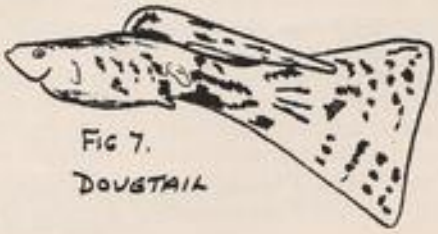


FIG 7.
DOUGTAIL

These fish, whether they have the traditional type of colour patterns or whether they have developed patterns, such as the snakeskin topsword, always create a stir when they appear on the show bench. There are two types of swordtail: the European type and the American type. They are quite different in many respects. The American doublesword has much thicker extensions and usually a shorter dorsal than the illustrated European type. Other male outlines bred include the Dovetail.

From these few examples one can see that a whole variety of guppy types can be bred. Each of these shapes has resulted from a particular combination of genes and to maintain a particular shape it is necessary to control the genetic material being used. In order to do this a strict breeding programme must be followed unless one wants to produce hordes of mondescript guppies.

Systems

A basic knowledge of genetics is useful if one is breeding guppies but not essential. Many fine strains have been developed and maintained by careful visual selection of breeding stock, using only the best male(s) and female(s) from each generation.

The first hurdle to overcome is finding good breeding stock. Do not be fooled into thinking that by putting a good shop-bought male with a good shop-bought female, top quality offspring will be produced automatically. This very rarely occurs. I repeat again, the guppy has a wide genetic potential and such a pairing may give rise to a whole variety of genetic combinations. One mating is sufficient to fertilize three broods so the female will more than likely be gravid to a totally different male before you buy your pair. Ideally, purchase your fish from a good fixed strain. How does one find these strains? Join the national organisation specialising in guppies, The Fancy Guppy Association, or your local aquatic society.

Having obtained a true pair (in other words fish from the same strain) thought must be given to how these fish are going to be used.

Showing a four tank system

	Tank One	*Tank Two*	*Tank Three*	*Tank Four*
Birth	Fry F1	Parents		
3 weeks	♀F1	Parents	♂F1	
12 weeks	♀F1	Parents	♂F1	Best Pair
16 weeks	♀F1		♂F1	F2 Fry
19 weeks	♀F1	F2♂	♂F1	F2♀

This table shows a system utilizing four tanks only. This system lacks versatility but is useful if only limited tanks or space is available. If the female was a virgin when obtained, then signs of pregnancy should be seen between 14-21 days after introducing the pair into tank one. The female will begin to swell and the eyes of the fry can be seen through the gravid spot. After three weeks the male is removed so that he will not eat any fry when they are born. The female should have her first drop at about 28 days. Whether or not a trap should be used or a planted tank depends on personal choice. When the birth is completed she should be removed. As only four tanks are used in this system it is not reasonable to contemplate retaining a second drop. The sexing of the fry should take place at three weeks of age making sure that any fish which cannot be identified as females are placed in the male tank.

At twelve weeks careful selection of the most suitable male and female must be made. Selection at this point is all important as these two are providing all the genetic material from which the strain is to progress. The process described for the first pair takes place again.

By the time the second generation reaches 12 weeks of age and are large enough for the breeding pair to be selected the first generation will probably be past peak showing quality and can be put into one tank or discarded.

The method of selection used is inbreeding, mating brother to sister each generation. The quality will deteriorate so it will be necessary to bring in fresh blood after four or five generations. If possible the new fish might be obtained from the original breeder.

There are many alternatives to this simple system using more tanks. Whatever the alternative system used it will in its way improve the chances of producing good quality guppies.

One alternative system is a modification of that already described. Instead of using only four tanks, up to seven can be used. Starting again with a single pair but keeping two drops instead of one. Also, instead of using only one male and one female as the basis of each generation, two pairs may be used. If this is done then only the best fry of each generation should be kept.

From the original pair another, more complicated system, can be adopted. From the first generation two pairs are selected and these are put into two tanks. From these are produced two separate second generations. Breeding stock for the third generation is selected separately again so that in effect two separate lines have been developed from the same basic source. It is always necessary to move away from sibling matings at some stage and this system allows one to cross the two lines at any required stage.

Irrespective of the system chosen, it is very important that adequate records for each tank of fish is kept enabling correct selection to take place.

LAMPREYS

by Michael Callaghan

THE AQUARIST who is prepared to sacrifice certain of his fishes in order to maintain another, would find a fascinating and unusual aquarium "pet" in a lamprey.

This fearful creature is not, in fact, a true fish, though it does share common ancestors in the jawless prehistoric Ostracoderms. But lampreys have developed differently from the true fishes and are now more closely akin to the parasitic, mud-dwelling hagfish.

Like the hagfish, the lamprey's method of feeding is extraordinary and horrific for, after discerning a large fish as likely prey (this is accomplished by sight in the case of the lamprey, but by smell in the case of the blind hagfish) the creature will attach itself to a flank and bore into the flesh of the living fish.

The circular, funnel mouth of the lamprey is lined with many sharp teeth and by using these as rasps it exposes the flesh and, more importantly, the blood of its victim, which is an essential part of the lamprey's diet.

There are three European species of lamprey, the Sea Lamprey, the River Lamprey (or Lampern) and the Brook Lamprey (or Pride). These names can be misleading, however, for although the Sea Lamprey spends most of its life in the sea, it travels inland into freshwater to spawn. The River Lamprey spends only its early years in rivers, and its adult life in the ocean, and only the Brook Lamprey is exclusively freshwater.

As far as the freshwater aquarist is concerned, the only one of these three species which he may consider keeping is the Brook Lamprey. The juvenile form may be kept with success in an aerated aquarium, and it is not too large; even when mature it is unlikely to exceed nine inches in length. However, the adult stage is short as this species does not eat when mature for then its only function is to breed and then to die.

The Sea Lamprey is a much larger creature, growing up to three feet in length.

In spring the adults enter the rivers to spawn, negotiating the high, vertical walls of waterfalls by hauling themselves up the rock using their sucker mouths. When at last a suitable section of the riverbed is discovered, the male lamprey will commence the construction of a nest. Once more employing the mouth as a grip, it chooses and arranges numerous small stones in order to construct a protective wall. Here they spawn. Afterwards the pair shall die and their bodies shall be carried back downriver once more. The larvae are small, worm-like creatures differing considerably from the adult. Indeed, they were once thought to be a different species of animal. During this stage of life, the young lampreys inhabit burrows excavated in sand and mud, emerging only after the fall of night to eat small particles of vegetable and animal matter. This juvenile form (or *ammocoete*) may last for from three to five years.

Another four years of life may be enjoyed by those individuals who survive to the adult form. At this stage the smooth, mottled skin is grey or brown in colour and has fourteen gill slits. The gills are remarkable in their ability to inhale water as well as to exhale it. This allows the creature to parasitise a fish for long periods without necessitating the occasional release of its rasping mouth in order to breath. But, of course, the most interesting feature is its circular mouth. Many large teeth line the inside of the mouth and smaller teeth are found upon its mobile tongue. And all around the mouth a ring of soft, white flesh provides an extremely effective suction ring, allowing the intial attachment of the predator to its prey, or to the rocks which it must scale when travelling inland to breed. The effectiveness of this equipment has been demonstrated quite recently when countless thousands of opportunist lampreys navigated the length of two American canals—the New York State Barge Canal and the Welland Canal—finally emerging in the Great Lakes. Here they gorged themselves on the fish population and so effectively reduced commercial catches that many had to be destroyed by poisoning and electrocution and weirs have now been built in an attempt to prevent future invasions on such a devastating scale.

Lacerta lapida

Written & illustrated by H. G. B. Gilpin

TO MY MIND, by far the most magnificent of European lizards is the Ocellated or Eyed Lizard, *Lacerta lepida*. Rivalling the brilliant green of the Jersey Lizard, *Lacerta viridis*, its back and sides are further ornamented with circular markings reminiscent of the "eyes" on a peacock's tail. Furthermore it has the dignity of size, commonly reaching two feet in length and exceptionally thirty two inches.

My first encounter with the species was on a visit to Spain. We were driving away from Lake Medina, where amongst the grass at the water's edge we found many beatiful little green Tree Frogs, *Hyla hyla arborea*, and a big green Marsh Frog, *Rana ridibunda*, when we saw a dead Ocellated Lizard lying in the middle of the road. It was a fine specimen, sixteen inches long with broad blue patches standing out vividly against the green of its sides. We often found dead reptiles on the less frequently used roads in

Spain but in a country so rich in predatory birds the corpses were very quickly salvaged.

On one occasion we saw a Black Kite swoop down and seize a snake in its talons only a few score yards in front of the car. Shortly afterwards we saw three large terrapins, *Clemmys leprosa*, basking on the muddy bank of a roadside ditch. They were far more nervous than most of the smaller examples of their race met with in vivaria and "plopped" into the water before we could vacate the car.

My next view of an Ocellated Lizard under natural conditions occured the following year when visiting Portugal. We were walking through the Foros do Arras, across rough ground between the cork oaks, and came to a pool beside the track. Not far from the water two immature Ocellated Lizards, each about sixteen inches long, were basking in the sun. Alerted by our approach, they quickly disappeared into the undergrowth.

The following day, not far from Castello de Vide, we drew off the track and walked through a farm not far from the Portuguese Spanish border. The surrounding land was largely barren, covered with rough grass and many enormous boulders. On a partially clear space, posed like a stone image, was a large Ocellated Lizard all of twenty four inches in overall length. For several seconds it remained immobile, head raised, front legs stiffly erect and body held rigidly tense. Then it flashed across the ground and disappeared into a horizontal crevice between two big boulders.

Congratulating myself that there was ever possibility of securing it for at least temporary examination, I hastened towards its retreat. My enthusiasm for handling the animal underwent a marked diminution as I examined its refuge. The opening, amply large enough to admit a hand, allowed sufficient light to enter to give me a clear view of the lizard, pressed against the wall at the far end with its head facing outwards and a malevolent gleam in its eyes.

It was a superb specimen, very heavily built, with a head two inches across at its widest part. It was the head that reduced my hope of grasping the animal in my bare hands to vanishing point. Remembering, however, the many times I had picked up lizards with menacing mouths and dangerous looking jaws perfectly safely in vivaria, I decided to test the situation further. To this end I secured a long stick, varying from a half to one inch in diameter and very gently eased it forwards until it was just in front of the lizard's head. A quick snap of its jaws, which completely severed the end of the stick, convinced me that no attempt to capture a fully adult member of the species should be made without proper equipment. Guy Mountfort's description of Eyed Lizards as ferocious seemed well merited.

This specimen was beautifully coloured, basically green with the top of its massive head infused with brown. Its brownish-green back was laced with green and yellow lines and plentifully bejewelled with "eye-like" markings. Its legs, tail and sides were a brighter green, that of the sides marked with arresting vivid blue patches, rimmed with black. The long tapering tail occupied some two thirds of its total length.

Ocellated Lizards are largely ground dwelling but sometimes climb upwards into bushes and trees. They are active fast moving creatures and tremendous jumpers, capable of clearing five feet in a horizontal leap.

Under pressure they have been known to jump down from a height of sixteen feet, when escaping from an enemy in a tree, without apparent injury.

They feed upon insects, mice, birds, eggs, snakes and lizards and are said to take some fruit. They do a great deal of damage to ground nesting birds and have been seen dragging chicks, sitting birds and half-grown rabbits from their holes. Breeding colonies of Bee-eaters have been found with innumerable tracks of Ocellated Lizards around the nesting burrows.

I have seen Ocellated Lizards offered for sale on occasion but have so far resisted the temptation to buy them. Their carnivorous and cannabalistic habits are a disadvantage in confinement. Their willingness and ability to inflict an unpleasant bite also reduces their suitability for inclusion in vivaria. The bite is not poisonous, of course, but the saliva around the teeth can be toxic and the development of a septic condition around a wound is not unknown. Ditmars describes them as hardy in confinement, however, and with adequate accommodation they would indubitably prove uncommonly interesting.

FOOD FOR SOME!

By Hilary Maynard

My 1st is in HOOP but not in KEG,
My 2nd is in ANKLE and also in LEG.
My 3rd is in PARIS but not in ROME,
My 4th is in FAIRYLAND and also in GNOME.
My 5th is in MANLINESS and also in MALE,
My 6th is in YORKSHIRE but not in DALE.
My 7th is in EXPERIMENT but not in PROOF,
My 8th is in ANVIL but not in HOOF.
My 9th is in PLANET but not in MARS,
My 10th is in WEATHER but not in STARS.
My 11th is in NUMEROUS but not in MANY,
My 12th is in WHERE but not in ANY.
My last is in MUG but not in DISH,
My whole are quite liked by Paradise Fish!

Answer on page 312

WHAT IS YOUR OPINION?

by B. Whiteside, B.A., A.C.P.

Photographs by the Author

THE HOT, dry weather continues as I begin to type this month's feature. No doubt conditions will have changed by the time you are reading it. I shall begin by telling you a rather amusing story. Recently a young aquarist friend called to tell me that he had set up his first marine aquarium a couple of weeks ago and that he had just purchased his first marine fish—a clown. As I don't know very much about marines I asked him what kinds of food he would be feeding to his first fish. "Two flakes of dried food daily, plus one small piece of special frozen food," he informed me. I asked what the "special frozen food" was and he replied: "Deep frozen mice's droppings." "Mouse droppings?" I asked, rather incredulously. "Yes, mice dung," he replied. "I was told all about it in the shop where I bought it and the fish." I responded with: "That's the first time I've heard of that being used as fish food. Are you sure it's mouse droppings?" "Oh yes," he answered, "and it's very expensive to buy in little cellophane wrapped packets. You slice off a small portion and feed it to the fish. The remainder has to be put back in the freezer." "Couldn't be too hygienic," I responded. "Are you sure it's mouse droppings? If so, it would be cheaper to buy a pet mouse and collect fresh droppings." "The people in the shop told me the food was sterile," said the youngster. Knowing the lad well enough to realise he wasn't trying to pull the wool over my eyes, I decided to consult my friend Douglas Rose who's an expert on marines. A shared laugh over the telephone resulted in Douglas pointing out that he had never heard of such a substance being used as a food for marines; and he suggested that *Mysus* shrimps, sold frozen in small packets, was the probable food. A visit to the youngster's house produced the package of food in question—and the lad's parents were both rather relieved to learn the meaning of the word *Mysus* on the little package of food. It's some consolation to know that the young are not the only gullible aquarists around!

Our first letter reached me from a Belgian reader, Mr. Robin Barleycorn, who resides at Zilvervoslaan 7, B-1970 Wezembeek-Oppem, Belgium, and writes: "In recent copies of *The Aquarist* readers have complained about how expensive the hobby is becoming in the U.K. I know salaries are considered to be higher here than in England, but so is the cost of living and taxation, with V.A.T. at 25 per cent on everything. I agree most things in Belgium are more expensive than in England, so one would naturally expect the hobby to be more expensive here; but even so it seems to me that to keep fishes is excessively expensive here; and it's not only the fishes that are expensive but also the tanks, filters, pumps, etc. For example, when I bought my first 24 in. × 12 in. × 16 in. tank about five years ago, the tank alone cost me something like the equivalent of £70, the lighting was around £40, a medium sized pump £9, the heater (150 watt) and thermostat £7, and the U/G filter £4. You will see I have already spent £130 before starting to buy gravel, plants and fishes. I've tried to have certain goods sent over to me from England, but by the time one has paid postage and the duty on the goods it works out at the same price as buying them here; and the goods are frequently damaged by Belgian postmen who are not too careful with parcels. One would expect that some filters and pumps would be cheaper here, especially those from German or French manufacturers, but this is not the case.

"As for prices of fishes, they vary very much, but all are more expensive than in England and one gets only what one pays for. At my local shop the prices are roughly: female guppies 50-60p; male guppies £1·20-£1·60; swordtails £1·20-£2·00 per pair; black mollies £1·50 per pair; small neons (½cm.) 40p each; large neons 80p-£1·00 each; small angels 50-70p each; large angels (body diameter 4 cm.) £6-£7.00; very small—and not too healthy—discus £8-£10·00; tiger barbs 40p. The only possible way to reduce these prices slightly is to buy in bulk with other aquarists. This way we can save up to 30 per cent on the prices, but the fishes are then not kept in quarantine before they are sold and losses are extremely high. Plants are not so expensive: *Cabomba* 12p each; *Elodea* 10p each; *Hygrophila stricta* 25p each; *Sagittaria natans* 20p each. The choice of plants is not very great here so most people's tanks look alike. Luckily plastic plants were a complete flop at all shops here; people just avoided shops that stocked them so each shop had to get rid of them

to stay in business. I was very glad to read about other aquarists' problems with photography as their suggestions may help to improve my attempts at taking photographs of my tanks—as have many other suggestions from *W.Y.O.?* helped me with keeping fishes."

Earlier this week I decided to photograph my young nephew's coldwater fish as I have very few shots of such specimens because none of my friends keep coldwater fish in aquaria. When the aquarium photography mood was upon me I had a bonanza and, on returning home, photographed many of my own fish—most of which have had their photographs taken more than a few times. A young friend, Reggie Meek, invited me to photograph his single marine fish. Inside a couple of hours I had gone through two rolls of FP4 film and one roll of Plus-X

(both rated at 125 ASA)—a total of over 100 shots. I've now developed the negatives and am pleased to note that not one of the shots—all taken using my flash gun—appears to show any flash reflections in the aquarium glass (although a couple of shots of large angels, taken from several feet away, could have done with a greater exposure, i.e. a lower f number). The majority of the shots were taken at f22 or f16, both of which give necessary depth of field when one is working only a matter of inches from the fish. The flash was mounted on an adjustable bracket on my Praktica's accessory shoe. Naturally I shan't know how good the photographs are until I print them—which I hope to do tonight. I hope to illustrate this feature with three of the photographs I took. If the photographs are consistently acceptable I'll give more details about the mounting of the flash, as it appears, from the negatives, to be in the ideal position to prevent the 'flash in the glass' reflections that appear to spoil many readers' shots of their aquarium fishes.

I've just returned from having spent five long hours in my darkroom—the bathroom specially blacked out for the occasion—and I'm pleased to note that all the negatives have produced prints that are perfectly acceptable. My main fault when printing photographs is that I tend to attempt to print about one hundred plus at the same sitting and, in a cramped bathroom in the small hours of the morning, I tend to reach a stage after a few dozen where I get tired and careless and don't pay enough attention to getting printing exposure times correct; and I tend to ignore the fact that the developing and fixing solutions cool off and reach a stage where they should be discarded and replaced. As a result, later prints in a printing session tend to end up not as black and white but as dark grey and light grey, i.e. the contrast isn't as good as it could be and prints lack 'bite' and impact.

Photograph 1 shows Reggie Meek's attractive, little clown which, in his aquarium, looks as if someone had painted its white sections with super white emulsion paint, so bright is the colour—if one accepts that white is a colour. The item showing behind the clown in the photograph is a large cowrie shell—and not Jaws, as someone who looked at the photograph suggested. The second photograph shows a close-up I took of the head and body of one of my gouramies. Moving in close with the camera has shown the attractive pattern of scales on the fish's body. Photograph 3 is of my young nephew's very attractive 'Sarasata' comet-tailed goldfish, with its silvery white body topped with a bright orange blotch.

The attractions of my young nephew's coldwater fish finally led me to set up a small aquarium and buy two coldwater fish: a moor, better known in my younger days as a black moor, and an attractive fantail goldfish. Despite the fact that the tank was set up in a reasonably warm situation, the moor died after six days; however, the fish didn't look too happy when I purchased it as its fins were rather shredded. But the fantail is thriving and has a pleasing, round shape.

I've just got back a set of colour slides I took using Agfacolor CT21 (ASA 100) film. The film is slightly faster than the popular CT18 film and I'm very pleased with the colour and quality of the results—as well as with the speed with which Agfa processed and returned the film (only five days between N. Ireland and London). I used the same techniques as with the monochrome films and exposures at f22, f16 and f11, depending upon subject and distance, gave good results. The variety of different shades of green of the plants showed up well and provided good contrasts with the brighter hues of the different fish. In all cases I used my flash mounted on top of my camera so that the light hit the glass of the aquarium at an angle of 45° to the normal.

My thanks to the British Koi-Keepers' Society for the latest edition of their intresting magazine, complete with some very well reproduced photographs. I was pleased to receive also a copy of the Newbury and District Aquarist Society's 4th Annual Open Show Programme, which has a very attractive painting, in full colour, of a marine fish on the front cover. The programme itself should certainly pull in both public and exhibitors so strong is its visual appeal. The show, which will be held in The Plaza, Newbury, on 3rd October, will offer 37 classes to exhibitors. I'm sure it will be well worth a trip—although it will be long since over by the time this feature appears in print.

On now to a letter that indicates that its author is bursting at the seams with excitement. It is headed 71 Bracken Road, North Baddesley, Nr. Southampton, Hants., and was written by Mr. J. E. Harris. "I have bred by accident a pair of medium cichlids—that is, a male *Cichlasoma nigrofasciatum* convict 4½ in. long and a female *Cichlasoma meeki* firemouth 4 in. long. They have bred four times so far and each time I have taken the fry out of their tank and put them into a 24 in. × 12 in. × 12 in. tank. The water was pre-conditioned with peat water. I took some water out of their original tank to start with, and after three days I added the peat water at 80°F. The parents mated in a 48 in. × 12 in. × 15 in. tank kept at 80°F; it also contains an 8 in. and a 6 in. tinfoil barb, two 4 in. scats, one male orange chromide, two 2 in. male convicts and a 3 in. male firemouth that was the original male for the female, but was kept down at the end of the tank, with the other fish, by the male convict. I had to put a partition in half-way along the tank to keep the male convict from fighting with the rest of the fish. Even the female firemouth chased them all away. They spawned each time in the corner of the tank on a piece of slate, with pits dug all round the area. There were about 100-150 eggs each time. The parents were fed on fish pellets, flake, and earthworms which I have always used as fish food.

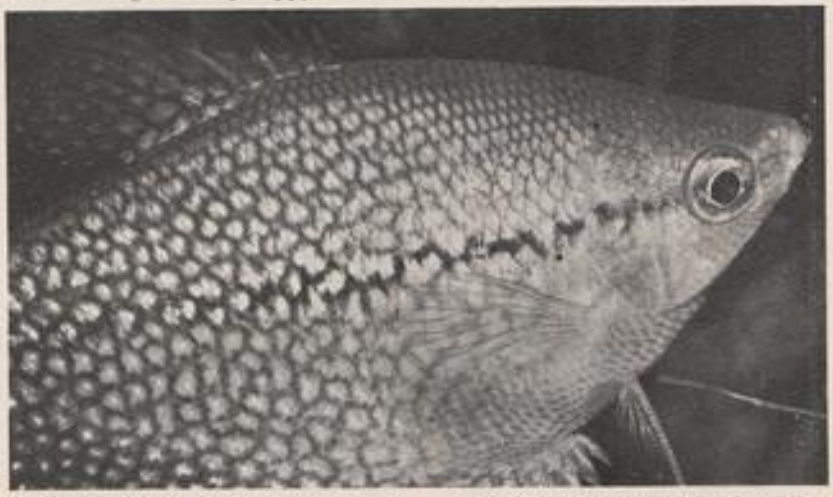
"I am also feeding the fry on fine powder, fine flake, brine shrimps and rotifers. The first fry are now 2½ months old. They have dark stripes down their sides and a very prominent spot near the tail—which is round and seems to be dark blue with light blue speckles round the edges. The bodies of some are very light, while others are dark. They all have the red throat and gills of the firemouth. The second batch are almost the same except that they seem to be lighter in the body. The third batch are still too small to notice any markings or colouring. The spawning dates were 20th June, 10th July and 25th August, and I am undecided as to whether or not to let them mate again at the moment as you know they will keep on breeding if you let them. I am writing this letter as I cannot find anything about hybrid cichlids in any of my books nor in any of your books which go back to 1969. I must say I have enjoyed them very much each month and they are very useful as a record to go back to. I know a few aquarist friends of mine and two own their own shops and they both said they have never heard of cichlids cross-breeding before; so of course I am very excited about it all. I now have four tanks of baby hybrids in my fish house." (I have posted Mr. Harris's letter on to Mr. Jack Hems for his expert opinion.)

I received the following plea from Miss Amber C. Kaighin, of 28 Murray's Road, Douglas, Isle of Man, and I think it's the first letter I've received from a reader who lives on the island where three feet make a yard. Miss Kaighin writes: "From reading your interesting article in *The Aquarist and Pondkeeper* each month I know that you have little time to reply to queries by post, but I am in despair over trying to grow plants in the aquarium! I have spent pounds on plants, mostly from mail-order firms, as our one local shop does not stock many; but almost all the plants have given up the ghost. I have a 24 in. × 12 in. × 12 in. bow fronted plastic tank with hood, which is lit by one white 30 watt tube left on for 12-14 hours daily. The room is also very light although the tank does not receive any direct sunlight. I take the water from the tap when necessary, but only for topping up every

so often. The water here is soft. Although it is not noticeable when illuminated by the overhead light, the water appears to have a yellowish tinge when the light is off.

"Until about three months ago I used a U/G filter and after reading conflicting articles decided to switch to an internal box filter and bought a new batch of plants; but needless to say they all went the same way as before. The temperature is maintained around 78-80°F, and I have been careful not to overstock with fish: one angel, two platies, two striped danios, three serpae tetras and two catfish—which all appear quite healthy. Until very recently I had one rather miserable looking Amazon sword, two *Aponogeton crispus*, one *Bacopa*, one or two cork-screw *Vallisneria*, a dwarf lily and a dwarf green rush. In fact, the latter was the only one which remained looking remotely happy. Then whilst on a day trip to Liverpool three weeks ago, I bought a bottle of (German) plant fertilizer. Being a little wary of introducing alien substances into the aquarium, I added only half the recommended quantity. What happened? Well, apart from the dwarf rush and the Amazon sword the others appear to be turning up their toes and succumbing totally. The leaves are turning a yellowish colour, rotting, and then parting company from the roots. Formerly, the leaves turned almost transparent and then the plants just disintegrated. This applied particularly to *Cryptocoryne* species. The rooting medium is the 3 in. layer of (branded) gravel that was in place when I stopped the U/G filter. I did increase the lighting wattage for a while, but that just increased the algae problem. At the moment there are some ¼ in. spots of emerald green algae on the back of the aquarium and on the quartzite rocks, for decoration. This algae seems pretty static at the moment. . . . I tried cutting the light out during the day when the room was at its lightest, but again this did nothing for the plants. Where am I going wrong? I've read all the books I can lay hands on and am still no wiser. Perhaps I'm standing too close to the problem to taken an objective view of it. . . . I have been struggling to grow aquatic plants for three years and am no better off than when I started, so I'm beginning to feel like trading in the fish and filling the tank with ferns. . . . I look forward to reading the magazine but wish there were more of it, more often." (I sent Miss Kaighin my reply; but I'll not disclose my opinions and suggestions. Please send me your opinions as to what steps might be taken to solve this plant problem. It makes an interesting Whodunit? problem for discussion.)

"I always look forward to reading the *W.Y.O.?* column, but was especially interested in the September issue containing two letters, one from Mr. Derek Chambers regarding experiences of fish acting as foster parents, and another letter from Mr. S. J. Haigh about rearing angels," writes Mrs. Nancy Shuttle, from 3 Wade Street, Middleton Junction. Nr. Manchester.



She continues: "We bought our first tank in May last year, and the first fish to take up residence included three silver veil angels and two marbled angels (or black veils as they were labelled). These were about the size of a twopenny piece and cost 45p each. About six months later, in November, they were about full size and paired off, two silver together and a silver and a marbled. On the afternoon of New Year's Eve we were delighted to see our first angel spawning—the marbled and the silver. The following day we were still more surprised to see the silver pair also spawning at the other end of the tank. On two or three occasions we made attempts to hatch the eggs artificially in a plastic tank sunk into the main tank but without success.

For three months the two pairs spawned regularly every two weeks. Meanwhile the other marbled angel was leading a not very happy existence, spending most of his days diving for refuge in the foliage to escape from the aggressive parents. Then one afternoon he obviously decided to change this state of affairs. He came sailing out of his lurking-spot, fins flaring and great red 'teddy-bear' eyes glaring, and attacked his black brother ferociously, locked jaws and dragged him down to the gravel over and over again. The battle lasted a few minutes. Albert (as I had christened the lonely one) won the battle and the female, and he proceeded to make it quite clear to her by determined nudges that she was to have nothing whatsoever to do with her erstwhile mate, who had now taken Albert's place as the fugitive in the foliage. Albert and his new mate spawned

regularly, and on one occasion when I had isolated them from the rest of the inmates with a tank divider, they kept their young for 12 days, but instead of letting the poor little things swim free the over-protective parents persistently chased them around the confined space and spat them back onto their leaf. On the 13th morning all the fry had completely disappeared. So I decided to give Albert and his mate the whole tank to themselves for their next spawning. I removed the other fish, including the silver pair of spawning angels, to another 4 foot tank. The silver pair spawned in this tank and two days later Albert and his lady wife spawned in their tank. When the silver pair's fry were four days old and wriggling healthily, Albert's young should have been starting to hatch at 48 hours old, but the entire brood had fungused. However, he and his female were frantically cleaning another leaf apparently in readiness to transfer their non-existent fry. Meanwhile the silver pair in the next tank had transferred most of their young to another leaf for the night, but there were still about 50 left waiting on the old leaf. I felt sorry for poor, busy, devoted Albert and his mate working so hard all for nothing, so (thinking 'To heck with it—they won't miss 50 young 'uns'), I nipped off the leaf containing the remainder of the silver angels' fry, lowered it into Albert's tank and held my breath, fully prepared to see them make a meal of the older fry. But the leaf had hardly touched the gravel when both angels swooped on it, scooped up mouthfuls of the 'foreign fry' and darted straight back to spit them out and settle them on their newly cleaned leaf. Then they fussed, fanned and fluttered over their adopted young—which were two days older than their own dead brood. However, when I looked at the tank the next morning Albert's foster-fry had all disappeared.

"About three weeks ago I decided to try to hatch some of Albert's young artificially, as the pair had spawned on two leaves. I put the second leaf containing about 60 eggs into a small 8 in. diameter plastic bowl sunk in the main tank, adding a few drops of methylene blue and a gentle air stone. Only two of these eggs fungused and I removed these immediately. They started to hatch after 48 hours; and remembering all the literature I had read on the subject of angels, I was hoping to see them swimming free in another seven days—nine days after spawning. But on the fifth day after hatching (only seven days old) I was delighted to see the whole brood swimming round and round their small bowl in a compact little shoal! The follow-

ing day I gently emptied the bowl of young fry into a 30 in. × 15 in. tank, and at the present moment, at 18 days old, they are swimming happily around, still in a shoal, growing fast and obviously determined to grow into big bonny angels. Incidentally, I fed them alternate meals of liquid food, powdered egg yolk, and baby egg-layer powder; and am now weaning them on very finely grated British food (in variety.)

"Just before the 'Yours truly' bit, may I mention a problem which I am sure is the main cause for fish-keeping beginners throwing a boot at their tank, or in the case of the less aggressive-minded types, merely vowing never to set eyes on a fish tank again. I mean that enemy in the gravel, the menace in the mulm—snails. I recently reached the last resort of completely stripping a 4 ft. × 15 in. × 15 in. tank and boiling the contents. (No—not the fish!) gravel and rocks, etc. Then to my horror I found another 4 ft. tank had become infested with the little black horrors! I had a recurrent nightmare in which I sent out an urgent S.O.S. ("Send Out Snail-killer), enclosing a s.a.e. ("Snail Anihilation Entreaty"), to the H.M.S.O. ("Headquarters of the Mutilation of Snails Officer"). My letter was intercepted by a member of the U.S.S.R.—("Universal Society of Snail Remover"), but unfortunately all their S.R.N.'s ("Snail Removers—Nightshift") were receiving medical treatment for the affects of overwork. So they advised that I might obtain some helpful advice from their local newspaper T.A.S.S. ("Transylvanian Association of Snail Squashers"). But it appeared that all the members of S.S. ("Snail Squashers") were already employed trying to cope with the back-log of work left by the poor over-worked S.R.N.'s, and they advised me to try the U.S.A. ("United Snail Assassins"). And when they realised the magnitude of my problem and the number of snails in my possession they said the only course open to me was to apply immediately for membership of N.A.T.O. ("Neurotic Aquarists' Treatment Organisation".)

"Well, a couple of weeks ago I wrote to Doctor D. M. Ford of the Animal Studies Centre for advice. He sent me a packet of small brown tablets with instructions to stick three of four of them on an inverted saucer in the tank just before switching the lights out. I didn't quite see how my snail population could be accommodated on a saucer. A dustbin lid would have been more appropriate. However, I put in a saucer at each end of the tank and rested each saucer on strips of corrugated cardboard about 10 in. × 5 in. Snails, I have discovered, have a cowardly way of crawling underground at the first rays of daylight, so the next morning I was up before the birds had started coughing, and both saucers and cardboard were thick with snails. I was sure that there were plenty more of their relatives and friends still left so I repeated the performance two nights later. Then I started worring about all the remaining snail-spawn still to hatch out in the tank. So in went a couple of goldfish, whose favourite diet (so I read recently) is—snails eggs. They certainly seem to be feeding off something on the gravel—picking up large pieces, chewing and spitting them out. And now there isn't a snail to be seen in that tank gravel. Which is some achievement considering the fact that only a couple of weeks ago it would have taken Steve Austin and his Bionic Eye to spot a piece of gravel on the snails! However, Doctor Ford informed me that these particular tablets are not on the market yet, but for the sake of any fellow-sufferers I do hope they soon will be.

"Well I guess this really is the 'Yours truly' bit. (Was that a sigh of relief I heard—or just a Force Nine gale blowing in?) Thanks for listening, and thanks, too, for your really great magazine—I'd gladly pay double the price for double the size."

I must thank Mr. Fred Allen for sending me the first two issues of "Newbury Neon," the magazine of Newbury and District Aquarist Society. Mr. Allen edits this interesting, little publication. Among the magazines' contents is a very useful list of the names and addresses of those who operate the major specialist groups in the U.K. The person who recently asked me about the British Cichlid Association will be interested to know that details may be obtained from Mr. Terry Green, 12 Greenwood Meadow, Chinner, Oxford. The other groups listed in the "Newbury Neon" include those dealing with marines, charcins, livebearers, discus, ichthyology, catfish, guppies, goldfish and killifish. Those who like funny jokes about Irishmen should read some of the (rude?) offerings on page 5 of the No. 1 issue of the "Newbury Neon". Contributions include Iris Tew and B. Gorrah. The joke about the ratchet would be an appropriate one to go with my opening story in this month's feature! I'm glad the chaps in Newbury enjoy jokes concerning Irishmen—just as I do. But one thing puzzles me: what food did you use to produce the big, fat neon drawn on the cover of "The Neon"? Has it any connection with big Murphy on page 5?

Mr. Stuart Elton resides at 19 Cromwell Road, Colchester, Essex. He writes: "I have recently become a regular subscriber to your magazine and find it very stimulating for, as there does not seem to be a fish club in Colchester, your columns are the only large scale contact I have with other aquarists. I was prompted to write by the letters and articles on coldwater marines. It may surprise Mr. Alex Byrne (*W.Y.O.*?—August, 1976) to know that I came to this fascinating branch of the hobby via tropical marines. I kept these undeniable beautiful

creatures in good condition for some months but was unlucky, or perhaps inexperienced, in my choice of inmates. For on adding a 4 in. moon wrasse I found the next day that it had chewed up and actually eaten pieces of an £11.00 anemone. By the time I caught this burrowing fiend it had removed all the spines from a hapless sea urchin. The replacement, a perfect little Gaimard's wrasse, settled in well and ate heartily and so I was surprised to find my hermit crab eating it one morning. As it was very 'nippy' I can only assume that it emerged from its night burrow directly under the crab.

"About this time my wife became suspiciously over-fond of my freshwater tropicals, remembering aloud the times that I used to return with a new pair of fish, and change from a £1·00. Worry over how much my next accident would cost began to outweigh my enjoyment, but I was still very interested in the diverse community that could be set up in a marine tank with the addition of those intriguing invertebrates not found in fresh water. Over the last few months I have had a lot of fun converting my tank for coldwater marines. Being a firm protagonist of the U/G filter, I find the coral sand worth its high price as part from stabilising the pH, it is perfectly acceptable to the creatures that like burrowing in our unsuitable native sand.

"Getting to know the natural history of the shore on collecting expeditions opens another absorbing angle to the hobby. Even the predominantly shingle beaches of the Essex coast provide a great variety of life for those with patience enough to look for it. I would suggest to Mr. Byrne, if it is this part of the east coast he is visiting, to try Dovercourt, near Harwich, or the beach under the cliffs at Walton. I am still waiting to coincide my visits to these places with a spring low tide which I am sure will reveal many new additions for my collection. At the moment these include spotted gobies, sticklebacks—which I was surpised to find are more common along the coast than in freshwater streams, red and green beadlet anemones that frequently produce young, prawns, shrimps, small shore crabs (the big ones being a bit destructive in my 3 ft. tank), top shells, muscles, barnacles, and a small form of feather worm which lives in a white calcium tube inscribed on the surface of a stone. As a result of an experiment I also have a guppy and a black molly living and growing happily in the cool salt water. My only failures, starfish, dahlia anemones and some shellfish are, I think, entirely due to the fact that the tank is indoors and therefore a good deal warmer than they would like. If only some bright spark would come up with a small scale refrigeration unit capable of reducing the temperature by these few vital degrees. (Perhaps not as impossible as it sounds.)

"Finally, I am sure anyone interested enough to keep our native marines will give them and their habitat due consideration and not look on the shore as an area ripe for plunder. I am always interested in exchanging ideas, and possibly even specimens, with other coldwater marine enthusiasts."

Our final letter reached me from 21 Tany-bryn, Pontymister, Risca, Gwent, the home of Mr. R. Bartlett. He says: "I have been keeping tropical fish for a year and have just started to keep cichlids. Can readers give me any help? Two months ago I bought a pair of 5 in. blue acaras. A few days later they spawned—and I found that they were both females; so I exchanged one for a male. About a month later they spawned. They took little interest in the eggs so they did not hatch. A few days ago they spawned again. This time the female took an interest in the eggs, but she did not remove any of the eggs that had fungus on them. The male took no interest at all. Also, I have never seen any tropical cichlid behaviour such as tests of strength; but I have seen them spawn and this seems to be correct. The fish are housed in a 36 in. × 12 in. × 15 in. tank with no other fish. The tank has a bad layer of algae through bad positioning, but I hope to change this soon. Could other readers tell me what they feed the acara on? My female accepts almost anything, but the male doesn't seem to like anything I give him."

For a future edition please send me your views on the following: (a) pencil fish; (b) the breeding of goldfish, during the summer, in indoor tanks or outdoor ponds; (c) unusual aquarium plants; (d) food for white worms; (e) breeding honey gouramies; (f) snails in aquaria and ponds; (g) terrpains kept in aquaria; (h) original cures for specific diseases; (i) prices of marine fish. Although I appreciate typewritten letters, I am always happy to receive communications in neat handwriting. Please PRINT names and addresses and number each page. I look forward to receiving your opinion on any facet of our hobby.

THE HIGHGATE AQUARIST

It has come to my notice from a considerable number of customers that certain Tropical Fish shops have been selling Discus fish allegedly obtained initially from myself. I would like to put on record that all Discus fish bred by myself or imported direct from South America and certain breeders in Germany are sold exclusively in my own establishment "The Highgate Aquarist". It has never been my practice to supply other dealers with these fish for resale.

EBERHARD SCHULZE.

Answer to Food for Some

PLANARIAN WORMS

MARINE MASTER-BUILDERS

Written and illustrated by Huw Collingbourne

THE CARELESS observer may easily ignore the wealth of life and beauty hidden, scarcely out of sight, beneath stones, just below the sand, even on the leaves of sea-weed fronds—but effectively concealed and protected by one of the many diverse forms of self-constructed tube. But the uninteresting or unnoticed exterior is deceptive—for within reside some of the most beautiful and colourful of all the native forms of marine life.

The long, muddy tube projecting out of the sand may conceal the startling, multi-hued fan of the aptly-named Peacock worm, *Sabella pavonina*, for example.

Another, more papery tube may yield *Bispira volutacornis*, the largest native tube-worm, notable for its spiral crown of tentacles, employed to catch food and also to breathe. A tube of sand is more likely to house the smaller *Branchiomma vesiculosum*, while a thick, jelly-like tube is almost certainly the construction of *Myxicola infundibulum*, a creature emphasising the amazing diversity found within this group of animals, with its webbed tentacles which form a massive crown of great complexity. As with all the fan-worms, however, it will withdraw these tentacles into the safety of its tube as soon as danger threatens—even a careless shadow thrown by a rock-pool explorer will prompt this instant protective reaction.

As aquarium animals, though, these species are strictly for the specialists. However, there are other, smaller species, ideal for inclusion in the simplest of aquariums. Encrusted on stones and on weeds, the minute *Spirorbis borealis* would be easily accommodated in the tiniest aquarium imaginable, though I doubt whether it could ever form the focal point of the marine community.

The rather larger *Pomatoceros triqueter* would be a far more desirable aquarium inhabitant. Pebbles, rocks and shells on virtually any shore will be found embossed with their runic scribblings. Their little, limy, white tubes must not be confused with those of the small hydroids, from which they may be distinguished by the sharp ridge running the length of the fan-worm's tube. Underwater, the small, variously coloured tentacular fans spread out, filtering the ocean currents. Singularly, this little worm may

not attract one's attention, but when viewed in large numbers on a well-colonised rock or shell, it can prove quite as attractive as the most luxurient display of living coral. Its tentacles are basically white, dashed with many brilliant hues of orange, red and blue.

A rather larger, and certainly more mobile worm is *Pectinaria belgica*. It constructs a tube of sand a few centimeters in length and wider at one end than at the other. But, unlike most other tube-dwelling worms, this little fellow is not content to remain trapped in one place, but instead, carries its tube around with it as it sets off to explore the submarine landscape. Upon finding a spot rich in vegetable deposits and detritus, the worm will begin to dig down into the sand, dragging its tube behind

Continued on page 323

OUR EXPERTS' ANSWERS TO YOUR QUERIES

READERS' SERVICE
All queries MUST be accompanied by a stamped addressed envelope.

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

TROPICAL QUERIES

by Jack Hems

I have just bought two fish called *Characidium fasciatum*. **Is this species any trouble in a community tank?**

This 3¼ in. member of the family *Hemiodontidae* should make no trouble in a community tank stocked with inoffensive fishes of near enough its own size. It likes plenty of plants to afford shelter and as it takes most of its food from the bottom worms of a swallowable size, shredded red meat and gnat larvae are advised.

Please give me some information on *Gnathonemus petersi*.

G. petersi is a member of the family *Mormyridae*. This family of several genera and species is confined to Africa. *G. petersi* is found in the natural state in Zaire and grows to about 8 in. It flourishes best in a well-planted tank with a soft (fine) sandy bottom and feeds mostly at night on such things as small aquatic larvae, various worms, tiny pieces of meat or raw fish and flake foods. It does not last long if it is placed in the company of too boisterous or lively fishes.

I have been told that distilled water I obtain from a garage is not as pure as it should be for topping up my tank. Is this true?

It very well might be. It is always advisable to order distilled water from a chemist's shop. Unfortunately, you will not find this distilled water cheap.

Kindly give me the family and scientific names of the apollo shark.

The scientific name of the so-called apollo shark is *Luciosoma setigerum*. It belongs to the widespread and numerous family of cyprinids (*Cyprinidae*).

I would like to know the full size of the red oscar. I have been told that my two young ones will soon outgrow a 2 ft. tank.

Red Oscar

True. The red oscar attains a length of about 9 in. or more and two full grown fish would require a 4 ft. or larger aquarium.

Siamese Tigerfish

I have just purchased a Siamese tiger fish and have placed it on its own in a 24 in. × 15 in. × 12 in. tank. Can you give me some information on the general requirements, maximum size and scientific name of this species?

Siamese tiger fish is the popular name given to species of the genera *Datnioides*. Your fish is probably *D. microlepis* from Thailand, Sumatra and Borneo. It may reach a length of about a foot. It feeds on worms and grubs, swallowable fish such as guppies, and the like, and meat. A well-planted aquarium maintained at a temperature of about 75°F (24°C) suits it best.

I wish to set up an acidic environment for tetras. Do you think a peat bottom instead of the usual grit would achieve the acid conditions I have in mind? I would be using an under-gravel filter to keep the water clear of floating sediment.

I can hardly imagine an under-gravel filtration system working very satisfactorily under a carpet of peat. Granules of peat would soon clog the perforations in the filter plates. It would be a better plan to cover the filter plates with a non-calcareous grit or well-washed granite chippings and then fill up with soft or neutral mains water or clean rain water strained through pure moss peat or the special aquarium peat imported from Germany.

Red-bellied Piranha

Recently I bought a pair of red-bellied piranha fish said to be about six to ten years old. The larger and brighter coloured of the two, which I take to be the male, measures about 5 in. not counting the caudal fin. Do you think there is any chance of this pair spawning in a 3ft. tank?

Let me say right away that few piranha fish have spawned in captivity. Moreover, from all accounts spawning has only occurred in very large tanks. Again, almost always really well-grown fish have spawned. I find it hard to believe that fish said to be at least six years old are no larger than 5 in. Ordinarily *Serrasalmus nattereri* grows much larger than 5 in. in about two years in a well-aerated and spacious aquarium. In the wild state it reaches about a foot.

I would like to build my own all glass aquarium. I intend to use pieces of glass cut from an old window. Could you tell me if the edges, prior to joining with a sealent, can be prepared by the amateur without any special tools or equipment?

All you require to cut the glass ready for making up is a good wheel cutter. It is of supreme importance, however, to use a thick glass. Put in another way, you will require glass at least ¼ in. thick for a 24 in. × 15 in. × 12 in. or 36 in. × 15 in. × 12in. tank. If the window glass is very old it might be risky to use it. Old glass, well-weathered, is often quite brittle. Furthermore, do not use pieces marred by any deep scratches.

I keep losing fishes without any external signs of molestation or disease. I keep them in a 24 in.× 15 in. × 12 in. tank covered with a hood I constructed myself only a few weeks' ago out of sheet zinc painted matt white inside to house the fluorescent light. Furthermore, although the light is kept switched on about ten hours a day, the plants look in a sad state. Can you give me any reason why my aquarium is not a success?

The remedy is to change the water and insert a sheet of glass between the top of the aquarium and the hood. This will prevent (I hope) condensation on highly toxic exposed zinc surfaces and fresh paint. One more word. A first class gloss paint given a good drenching with water is less likely to prove harmful to fish than a matt finish paint.

I am new to the hobby of aquarium keeping and would like to set up a large tank for angel fish alone. What are the chief requirements of these beautiful fish?

Clean water, a temperature in the middle to upper seventies (°F), tall-growing plants such as *Vallisneria spiralis* to provide shelter, and a mixed diet of live, flesh and dried food. I suggest that you obtain a copy of *Angel Fish—King of the Aquarium* by Dr Feroze Ghadially from this office. It will cost you 58p, post paid. Dr. Ghadially had great success keeping and breeding angel fish before he recorded his findings in this well-illustrated booklet.

In a tank set up about six months ago, I am unable to keep snails alive for more than a few weeks. All the plants are collecting a coating

of algae and fish food sometimes stays uneaten on the floor. I think that if I could establish snails a lot of the algae and uneaten food would vanish. Your help in this matter would be appreciated.

In more than forty years of fishkeeping, I have never come across an aquarium keeper unable to keep snails unless, of course, snail-tormenting or snail-eating fishes inhabited the aquarium. I suggest you watch the behaviour of your fish. If algae is your major worry, then I believe the answer would be the addition of more genuine underwater plants and the introduction of algae-eating fishes such as mollies or sucker catfish of the genera *Hypostomus* or *Otocinclus*. As for the uneaten food, the answer is to feed your fishes less generously.

What is the scientific name of the humpheaded cichlid and where is it found in the wild? I would also appreciate some information on its care and behaviour in the aquarium.

The humphead or humpheaded or blockhead cichlid is known to science as *Steatocranus casuarius*. It occurs in the lower to middle regions of the river Zaire. It favours turbulent waters. It demands nothing very special in captivity other than hygienic conditions and a temperature in the middle to upper seventies (°F). Most foods taken by the general run of fishes suit it well. In general, it gets on well with other fishes sharing its tank but it can turn sharp tempered when courting and breeding. That it does not grow larger than about 4 in. and is not addicted to chewing or uprooting plants are points in its favour.

Please give me some information on the miniature barb.

If your fish or the fish you have in mind is golden olive in colour and not more than 1½ in. then I suspect you mean the dwarf barb or dwarf golden barb, with the formal name of *Barbus gelius*. This little fish from the more central parts of India is inoffensive and eats almost anything small enough to be swallowed. It does not demand a very high termprature and a range of about 66°F (19°C) to 72°F (22°C) is quite all right. The male displays a horizontal band of coppery red on the sides and some black flecks posteriorly.

COLDWATER QUERIES

by Arthur Boarder

My pond goldfish spawned this year and I have about forty young ones about two inches long. Some have ordinary pairs of pelvic fins, but about half have none at all. Is this unusual?

I certainly think that this is unusual. I cannot recall a similar case. The pairs of pelvic fins are present in all the goldfish I can remember seeing. It is more often found that it is the anal fin or pair of fins which are either completely absent or not according to the variety. All the fancy goldfish with double tails should have paired anal fins. However, I have found that during the years I have bred fantail goldfish, most of the young ones have a paired anal, some have a single one and others have no anal fin at all. In most spawnings of fancy goldfish one usually finds some unusual types, some even could be called freaks. It was the appearance of the unorthodox ones in the past which enabled the breeders of the far East to introduce the varied types we have today, all from the original goldfish. The varieties of fancy fish I could have bred during the past would be enormous. The majority of the unusual shapes was found in the caudal fin. This fin will sometimes appear single, other fish may have one which is webbed, or joined and others with a properly divided fin. The Japanese have worked on many of these variations and today the number of varieties have become numerous. Some of them have become established types bred in this country, but others have not yet appeared here in any numbers.

Some of the varieties bred have only Japanese names and I will mention a few to give some idea of what we may expect in the future. The Japanese Golden (Wakin); the Fringetail (Ryukin); Yamagata goldfish (Watonai); Buffalohead (Ranchu); Osaka Buffalohead (Osaka Ranchu); Marco (Marko); Nankin; Peacocktail (Jikin); Telescope eye (Demekin); Celestial (Chotengan); Dutch Lionhead (Oranda Shishigashira); Ironcolour Fringetail (Tetsa Onega); Narial Bouquet (Hana Fusa); Dutch Calico (Azuma Nishiki); Marked Calico (Shubunkin); Ironcolour (Tetsugyo); Testa; Autumn Calico (Shukin); Golden Bleareye (Kinranshi) and Chinese goldfish.

The above list gives some indication of the varieties which have been introduced but this must not be thought to be a full list, as others are being bred every few years.

I have a plastic lined pond which is well stocked with various fishes. I have a pump which circulates the water over a fall. In the mornings I have found the fish at the top of the

water with their mouths at the surface as if they are trying to get air. Why is this please?

The fish are at the surface mouthing for air as the water in the pond does not contain sufficient oxygen for them. Neither the size of the pond nor that of the fish was given. It would help me considerably to find the answer to your problem if I knew these facts. One point must be realised. Underwater oxygenating plants do not give off oxygen during the hours of darkness but the opposite is performed. Therefore the pond water is likely to become dangerous to the fish during the night time. This danger is increased when the water is warm in the summer. A pump to circulate the water does nothing to filter it and if there is a quantity of decaying matter on the base of the pond, this can be stirred up and circulated throughout the whole of the water in the pond. It is surprising how soon average sized fish can use up the oxygen in a constricted area. Even the small boy soon finds this out when he catches a dozen Minnows and tries to take them home in a jam jar. Before arriving all the fish are dead. If he had been content with one or two, he might have been successful. Space is one of the most important factors when keeping fishes.

Two months ago I had six Shubunkins and six small Koi in a medium sized pond. After a short space of time two of the Koi became ill and one of the gills remained closed and the fish stopped feeding. I tried various advertised cures but if one gill improved, the other than became infected. Is there anything else I can do, as the fish returns to the same state yet no Shubunkin has been troubled?

It is possible that the Koi may have been bred under warm conditions and that when placed in your pond they became weakened and caught a germ. The trouble which causes the gill to close appears to be caused by a germ which could cause an excess of mucus to form over the gills which caused the closure. As you have tried many cures I think that you could try the salt cure. Use sea salt only and, in a clear tank, add the salt at the rate of a dessert-spoonful to the gallon of water. Do not stir but allow the salt to dissolve gradually. Do not feed while the fish are under treatment. After a day or so increase the amount of salt until it is four times the quantity. As the fish must continually take in salt to the gills as they breathe, it is possible that this will bring about a cure. Try a couple of the fish at first to see if this works.

Please could you tell me where I can get spare parts for the Minor and Major Montrose air pumps?

The last address I have for these parts is: C. T. Cutler (Montrose), The Grove, Hyde Lane, Gay Bowers, Danbury, Essex. I cannot be sure that the firm is still resident there.

My goldfish have bred in the pond and I have a number of fry. Some of these have changed colour but most of them have remained the colour of Crucian carp. Is it the strain or anything to do with the temperature of the water?

Both the strain of fish and the temperature of the water are deciding factors in the time of the colour change. All the fry from visibly scaled goldfish are bronze in colour when small. They can change colour within three months or take years. I recently heard from a reader that one of his goldfish had changed colour after seven years when it was quite large. This may have happened because of the exceptionally hot and continuous sunny weather. It is a fact that some strains of goldfish will change colour sooner than others. When I was working on establishing a strain of fantail goldfish, I had three major factors in mind. One was that the fish would be of a standard for exhibiting, another that they were hardy enough to stand the winters out of doors, and that they changed colour within the year after hatching. After a few years of selective breeding I found that all the youngsters changed colour within the year of hatching. For ever after that no fish was not completely changed after about six months. So much for the strain, but I also proved that by using some warmth, up to 70°F, or just over when the fry were young, this brought a colour change within a couple of months with many of them.

I have bought six golden Medakas and I have been told that they are from Nothern Europe and my dealer describes them as nondescript. What are they?

The Medeka, *Oryzias latipes*, is commonly known as the Japanese rice fish, or the Geisha-girl Medaka and they come from Japan. Originally treated as a tropical fish a breed has now been established which are hardier. They can be fed on the same types of food as is used for goldfish; like them they appreciate small live foods. They can be bred in tanks as they reach a size of 4 cm. and so large tanks are not needed. It is said that the female carries a type of pouch containing the eggs which are brushed off among water plants.

However, it has been found that the fry seem to lose their hardiness. Also a slightly brackish water appears to suit them best.

I would like to use other materials for my tank instead of rocks, which are heavy. I thought of foam sponge material which I could

paint. What is you idea of this please?

I do not advise using anything like sponge, as the pores could attract various matter which could soon cause water pollution. I do not think that one or two small rocks in your tank would cause a weight problem. You need only one or two and I have found that Westmorland rockery stone is ideal for this. See that there are no sharp edges to the rock and do not arrange it so that it could form a trap at the back of the tank.

I have seen furnished tanks at exhibitions with numerous water plants, in fact some so crowded with them that one cannot see the fishes. Is this necessary when setting up a tank for the living room?

Certainly not, and if you did, within a month or so your tank would be overstocked with plants and you would hardly ever see your fish. Also there is a danger in that if there is no aeration working during the hours of darkness, the oxygen content of the water could fall to a dangerous level. Try to arrange some plants at the rear of the tank; do not overdo it as they should soon grow. Keep the front of the tank open so that the fish may be seen.

I would have liked to exhibit fishes at the Belle Vue annual show in Manchester but I have been informed that I cannot do so unless I am a member of an exhibiting Society. Is this so and if it is, why?

It is true that only members of an exhibiting club or society can exhibit fishes unless they are eligible to do so in the Champion of Champion class. The reason for the rule is that the organisers of the show are not daft. They realise that by this rule they lose all responsibility for providing tanks, heaters, water, etc. The exhibiting clubs have to do all this and set up their stands themselves, which saves the organisers expensive staging. Also the show with its very attractive stands provides a spectacle for people who may not be dedicated aquarists and so an aquarist can bring along his family and friends with the knowledge that they will not be expected to be bored as they might have been at the sight of rows of tanks containing, perhaps, one small tiddler half hidden by the front frame. Some of the stands over the past twenty-four years have been well worth viewing and so the non-aquarist is well catered for. You should join a club and then be able to exhibit, and I wish you luck.

I have a pond 36 ft. × 14½ ft. × 2½ ft. deep with gravel filter and a water-fall. It is stocked with Orfe, Shubunkins, moors and goldfish. I would like to add fancy goldfish such as celestials, orandas and veiltails. Will they winter well out of doors?

Your pond is of a good size and you should be able to keep the fishes healthy. However, some of the fancy goldfish are unsuitable for a pond. They are better kept in tanks indoors. It is not wise to have moors, celestials, bubble-eyes, orandas and veiltails. Some of these are unsuitable because of their eyes which are liable to damage in a pond and the others because they have such flowing finnage that they would be liable to get fin-rot or fin congestion during a hard winter. You can have fantails and lionheads in addition to those you have already. Koi should thrive in your pond but do not add any so late in the season. It will be better to wait until the spring unless you can get some which have been kept in outdoor ponds in this country for some time. I advise you to try one or two small ones before buying large expensive fish. Then if they thrive you can add more if you wish. Providing all goes well with the pond you will find that Orfe and Koi will grow quite large and make a fine feature for your pond. You must realise that all the types of goldfish can breed together and so produce a lot of varied fish which will be of little value. Although your pond is of a good size it is not wise to overstock, keeping in mind the rate of growth of some of the fishes.

My red ear terrapins have been in my garden pond all summer. Will they winter there and hibernate?

Terrapins usually hibernate for the winter and bury themselves in the mud at the bottom in nature. In this country it will be advisable to bring them indoors in a vivarium with sufficient water and to keep them on the cool. They may then hibernate if there is some mulm, etc., on the bottom. Their usual food is fish, meat and water snails, their appetites decreasing as the water cools down.

We have just taken 150-200 catfish fry from our garden pond where there are orfe, large goldfish and tench in the pond. Are the catfish mouthbreeders?

The North American catfish, *Ameiurus nebulosus* is known as the Brown Bullhead and these fish are not mouth brooders. They do not appear to breed in tanks but have been known to do so in ponds. A shallow depression is made for the eggs and the fry are tadpole-like in appearance and bunch together when tiny. The parent fish usually lead them around after a time. They can grow to 40 cm.

I have a tank 24 in. × 12 in. × 12 in., well stocked with plants and fishes. I have several goldfish and they seem to be in good condition. I recently bought a Moor and introduced it to

Continued on page 321

A Snake called 'Jaws'

I was recently reading, for about the third time, the August, 1976 edition of *The Aquarist*, when I noticed, in the "Coldwater Queries" section, an article that stated a snake had attacked and bitten a large carp which died two days later. The supposed culprit was a grass snake.

I would suggest that a grass snake would not attack anything that was too large to swallow and even if it did it would not leave a wound anything like the peckings of a bird. The grass snake's jaws are not strong enough to remove flesh and have to swallow their prey whole. I would therefore suggest that the wounds were caused by the poison fangs of the adder and that the carp died from the result of this poison.

While on the subject, the grass snakes' diet consists mainly of frogs occasionally small fish and mammals and only an extremely hungry one would try to tackle a toad.

Yours faithfully,
I. McGIVERN.
30 Caithness Close,
Mount Nod,
Coventry CV5 7LY.

Missing Trophies

The Cardiff A.S. are having difficulty in retrieving trophies that were won in their open show in 1975.

Would anyone knowing the whereabouts of Mr. K. Usher, last known address, 184 Gladstone Park Gardens, London N.W.2 (former member of the Doncaster A.S.) please contact Mr. B. Mills, 3 Rutland Street, Grangetown, Cardiff. Tel: 388046.

Yours faithfully,
B. MILLS,
Show Secretary,
Cardiff A.S.,
3 Rutland Street,
Grangetown,
Cardiff.

Bouquet for Judges

Although a report of our recent "Open" will appear in the "News from the Aquarist Societies" section, I would like to make a special appreciation of the efforts of our judges on the day.

First of all for their sympathetic help when one of the show tables collapsed, complete with several catfish, but mainly for their attendance when they knew that Phil Moorhouse could not attend due to an accident. Roy Francis had travelled from Manchester, and it should be pointed out to the handful of regular "bellyachers" against judges that Mal Jones had travelled from Bury and had to rush home to visit his wife in hospital! There are many of us who rightly think that we put ourselves out a bit for the hobby, but without judges of this calibre, thousands of hobbyists and the general public would lose a lot of pleasure.

Yours faithfully,
GEORGE ROBINSON,
Secretary,
Hoylake A.S.,
24 Heathmoor Road,
Moreton,
Wirral,
Merseyside.
L46 7UN.

The Catfish Association of Great Britain

In the August issue of your magazine, one of your readers asked about David's Upside-down Catfish.

I would like to be given the opportunity to give some further information on this member of the family Mockokidae.

In 1970, Dr. Herbert Axelrod described what he thought was a new species of *Synodontis*, naming it *Synodontis davidii*. In fact this fish had already been described by D. Vinciguerra in 1928, and had been named *Syndontis contractus*. As this was the first name given, then the name *Syndontis contractus* is the valid name.

In the same issue of your magazine, Mr. J. Davies of Orpington, Kent, wrote an excellent letter with regard to *Hypostomus* catfish. He also complained about the need for reliable information on the various catfish species.

The Catfish Association of Great Britain was formed by a group of enthusiasts to try to meet this need, and from a modest beginning, has, over the last three years, grown into a large National Association. A quarterly magazine is distributed to all our members, and at our meetings slide shows and lectures are given by some of the foremost authorities in the country.

We have also published the first of a series of information booklets which are available to the general public (price 50p plus 9p postage).

If Mr. Davies or indeed anyone seeking further information about our activities, would care to write to me I will be only too glad to send full details.

Yours faithfully,
ALAN HALEY,
Secretary,
Catfish Association of Great Britain
19 Maclean Road,
London S.E.23.

From a Naturalist's Notebook

by Eric Hardy

FISH KNOWN as the Manchester strain of trout do not come from the murky Irwell of our northern metropolis. They are rainbow trout progeny of the Manchester National Fish-Hatchery in Iowa. They are derived from mating one male with one female and changing males every fifth female. They were used at the fish genetics lab. at Beulah, Wyoming to study the density-dependent factor governing the number of fish which can thrive in a tank—the resulting ammonia nitrogen. Too much of this from high fish-densities reduces growth.

By manipulating density, fish-culturalists achieve the most rapid growth and maximum weight, to balance yield with cost. Over a 6-year period, Manchester and wild fingerlings were studied in 62 circular tanks of 1·22 m. diameter. Their growth and survival depended upon dissolved oxygen being above 5 p.p.m. and ammonia nitrogen level below 0·5 p.p.m. The latter was exceeded when the weight of fish per tank was 11·5 kg. resulting in gill-hyperplasia, debility and growth-inhibition. But the oxygen did not drop below 5 p.p.m. until the fish weight reached 60 kg. Thus oxygen concentration alone is not a safe criterion for tank fish-capacity.

Ammonia nitrogen also increases with temperature and feeding of the fish. Water-inflow can also be adjusted to correct it. The gill-damage from increased ammonia nitrogen may later encourage bacterial infection. A number of mathematical tables for working out these ratios are given by Brauhn, Simon and Bridges' recent researches into the matter.

Following my recent remarks on the snake anti-venom centre at Liverpool School of Tropical Medicine, Dr. H. A. Reid, has kindly sent me further accounts of his work. A bite from a venomous snake does not necessarily poison one, for it has two types of bite. The hunting bite, when the serpent is after prey, injects a large amount of venom; the defensive or warning bite, when escaping, injects little or no venom.

Most snake-bites on humans are the latter. Anti-venom of course is a strictly medical treatment by intravenous drip, not for amateurs' first aid. Wrongly used, it can do more harm than the bite; it is required only in serious poisoning. The anti-anti-venom lobby of propaganda arose from the limiting effect of unrefined Pasteur anti-venom coming into disrepute when it caused a boy's fatal reaction in 1957. The effective, more highly concentrated Zagreb anti-venom has no such risk when used today for neutralising severe adder-poisoning. This was developed in Yugoslavia by using venom of the continental long-nosed sand-viper (*ammodytes*) as antigen. Dr. Reid lists the most dangerous poisonous snakes to humans as: the eastern and western diamond rattle-snakes of the U.S.; South American tropical rattle-snake and fer-de-lance; African puff-adder and the mambas; African and Asian cobras and the saw-scaled viper; Russel's viper, Malayan and sharp-nosed pit-vipers and the Indian krait; and the Pacific-Australian tiger-snake, death adder, taipan and Papuan black snake.

At last, the Mexican Indian legend of green turtles hibernating for winter in the warm bottom of the sea near the Gulf of California, off Sonora, has been scientifically proved. Unfortunately, the Indian harpooners locate the sleeping turtles by characteristic lumps in the sandy bed. Other races of green turtle migrate miles to winter quarters and it is thought that cooler Pacific waters act as a barrier to those in the Gulf of California. Sea-snakes and some fresh-water turtles have been shown to respire through their skins underwater, but not for this length of time. Anaerobic metabolism without oxygen is another suggestion in what may yet prove an unique method of hibernation, as research centres on the phenomenon.

Many a collector's favourite field-pond dried up last year and this, and is now grass-grown. The Norfolk broads, which I visited (Barton, Hickling, etc.) in September, were earlier 18 inches below normal, but recovered much from heavy rains in September. The bearded tits were numerous at Hickling's "Swim Coots" and in the reeds around White Slea Nature Conservancy reserve, both approached from Decoy Lane below Rookery, in the south-west.

Barton Hall, at the south-east of Barton Mere, is now well laid out as a field-study and nature centre for schools, etc.

In contrast, and an aftermath to the North-west's wet spring, the latter is the only part of the country without a very low level of liver-fluke risk to farm stock this winter. Not that the North-west has anything like the 1968 abundance of this pond-snail parasite. Then 580 out of 8,000 of its little pond-snail host *truncatula*, which wanders into nearby

wet grass, were found to carry the flukeworm in eight hours searching. Only eight infected snails were found among 1,400 of the host in a similar search this year.

Despite the drought-shrunk waters, *Butomus*, the so-called flowering rush, was better than ever, sharing South Lancashire's Rufford Canal with both the bur-reeds. I never saw the lesser bladderwort flowering better in Cheshire than this year at the lily-pool in 'Sandiway (Cuddington) scout-camp, and the sundews there and at Oakmere Arm, both in the Delamere area. Naturalists and Nature Conservancy finally came to terms to dig more and deeper water-attracting breeding sites for natterjack toads in drying dunes between Shore Road, Ainsdale and Weld Road, Birkdale, Southport. Here, and Southport-Hesketh golf-courses are still the sand-lizard's main haunts. If more could be bred in captivity to release fresh stock on the dunes, as repopulation, it would aid conservation of habitats.

When I was in charge of the Middle East Biological Scheme, collecting specimens for the British Museum at the end of the war, I harboured hopes of finding cave-fish in the mountains by the Dead Sea where we found several *Cyprinodonts* in the sweetwater pools at Ein Feshka, etc. We even planned an expedition to the Turkish border, but fighting among the natives around Mount Ararat caused its cancellation. In 1950 an Oxford University expedition to Iran failed to find its traditional blind white cave-fish; but almost immediately the Danish ichthyologists, Bruun and Kaiser, published their discovery of the blind, colourless cyprinid, *Iranocypris typhlops* collected before the war in the subterranean streams of the Zagres mountains of south-west Persia.

Another Oxford expedition followed this up and brought back two live cave-fish, which were kept alive several weeks in a tank. P. H. Greenwood, of the British Museum, recently described one of these to the Zoological Society as a new species, named *Noemacheilus smithii* in honour of Anthony Smith, leader of the Oxford expedition. It is the first blind, colourless cave-dwelling cobitid (spiny loach) known and, except for four *Amblyopsis* species in the Mammoth Cave of Kentucky, these are the only known freshwater caves with two different blind cave-fish species. It is white, suffused with pale pink, its intestines visible through its transparent flanks, its gills deep red. Like our stone-loach, it climbed the sides of its tank, spending most of its time out of the water, though also moving or resting on the bottom, for it has barbels. Sightless fish have modified pituitary glands affecting growth, and are sensitive to light as well as temperature changes.

Other cave-dwelling members of this genus are either normal loach colour, or paler with smaller eyes (in the Sigu cave of Assam, and *N. evardi* in Indian caves). As the young Cuban cave-fish *Lucifuga* is born with eyes which degenerate as they grow, and goldfish have been bred for generations in complete darkness until they lose their eyes, it seems that these cave-fish evolved from their normal relatives. The pink Mexican cave characin *Anoptichthys jordani* was discovered so recently as 1936, the only blind fish, I understand, to reproduce regularly in captivity. Cuban and Mexican cave-fish are both *Botulids*, related to sand-eels. Cave-fish usually have longer fins to reduce swimming vibrations, which might interfere with their acute echo-location contacts. In swift streams, Persian species have the paired fins wider apart. The Kentucky fish carry and incubate their eggs in their gill-chambers, for a higher hatching and survival rate. A blind goby inhabits seashore caves of Mexican California, and is adapted to echo-location with sensory projections around its mouth.

Rumours that the zander, or Danubian pike-perch, a mainly Cambridge-Bedfordshire introduction, is in Napton Reservoir and Thrapston Gravels in the Midlands near Coventry, were doubted by Seven-Trent Water Authority as they had no specimens. But they have identified it in Coombe Reservoir and the Coventry Canal near Hawkesbury. Specimens were introduced from Fenland illegally. These are unwelcomed by anglers as they are predators on roach and bream; but they can be part of still water communities.

COLDWATER QUERIES *continued from page 318*

the tank. After a few days I found it dead and it showed signs of injury. I had noticed that some of the goldfish had been chasing it and knocking it about. Do you think they killed it?

I suspect that the moor was a female fish and that it was full of eggs. Some of your goldfish were males and they were chasing the Moor to encourage it to lay eggs. This chasing can be very violent with healthy males, especially if there are several to the female. In a tank the size of yours the female could not have escaped from the attentions of the males as she might have done in a well-planted pond. Moors and similar fish have a short, fat body and it seems that this will usually excite the male fishes to the urge to spawn.

THE SECOND YORKSHIRE AQUARIST FESTIVAL

by Dennis Greenwood (Hon. Secretary, Y.A.A.S.)

IT IS NO SECRET, that some members of the Yorkshire Association of Aquarists, were somewhat sceptical about the outcome of the First Y.A.F. which was held at Doncaster Racecourse on the 23rd and 24th of August, 1975, and we were naturally very pleased when the actual event proved the doubters wrong; it was a great success.

There were no pre-Festival doubts about the second Y.A.F., however, which was held at the same venue on the 21st and 22nd of August, this year. There were twenty-five trade stands and all were very busy for the whole period of the show, so much so, that many of them had sold so many of their fish and accessories on the Saturday that they had to re-stock, ready for Sunday morning and they were kept busy up to, and even after, the show closed on Sunday evening.

There was a twenty-five per cent increase in the number of Society Tableaux Competition entries this year and they included a great variety of differing themes. There had been a vast amount of hard work and ingenuity spent on these exhibits, and some of the Society members involved in making and setting up their stands had worked non-stop, night and day, from early on the previous Wednesday morning, right up to the time of judging at 6.00 p.m. on the Friday evening.

The pre-judging activities of all the many aquarists involved in the frantic preparation of their creations, in time for judging, had to be seen to be believed. This is the time when all aquarists involved in this type of venture, give all that they have, not only n helping their own members to build their stands, but in helping members of other societies to complete theirs as well. I know of one instance where a member of one society offered some seashells to the members of the society which had the next stand to theirs to help them to improve their chances of winning a place in the competition. This is indeed, the very essence of good sportsmanship and this was by no means an isolated incident of this type. The friendly atmosphere, and cheerful cameraderie of this pre-show period was, to me, one of the highlights of the entire show.

The Yorkshire Koi Society had a stand showing many beautiful Koi in their pond. The probable value of these fish on display must run into many hundreds of pounds. The Orchid Society also had a very interesting stand which created a great deal of interest. I should think it would be very difficult to set a price tag on the very rare and beautiful blooms on display.

The final display was really a sight to behold. Chesterfield Society took the first prize in the Society Tableaux Competition with an Art Gallery; the walls inside this exhibit were adorned with a fine collection of paintings which had been painted by one of their members and they were really works of art.

Second prize went to the Doncaster Society with a large model of a Monorail car. Third prize to Goole, with a very nicely made and highly colourful Omnibus. Fourth prize was taken by Worksop, their theme being a full-size Guillotine complete with executioner and condemned.

Fifth prize went to Sheffield with their model of a Thatched Cottage. There were many other, very well made, and highly imaginative entries. Sheaf Valley, with a well stocked bar which was so realistic that many visitors approached it to order drinks. Retford's Musical Box was another one much enjoyed by the younger visitors and others, by Bassetlaw, Immingham, Thorne, Scarborough, and Bridlington, and all the others, were very much enjoyed by everyone. It was a very interesting and colourful event. The Tropical and Coldwater Fish shown in these stands were of the very highest standard.

Mr. and Mrs. Blades, of Bassetlaw won the Trophy for "Best Fish in Show," with an exceptionally fine specimen of South American Killifish, a quite rare *Pterolebias*, a really beautiful fish.

"Best Exhibit," was a fine Breeder's team of Black Neons entered by Mr. J. Wood of Airborough. Mr. Holmes of Castleford took first place in "Fish of Fishes" with a Whiptail Catfish; Mr. "Tony" Bins of Scunthrope Museum, came second with a very nice Eques, and third place went to Mr. and Mrs. Blades, Bassetlaw, with a Sun Bass.

The trophies were presented by Mr. Ian Campbell, an unexpectedly "Gentle Giant," not in the least like the fearsome warrior of the wrestling ring we are more used to seeing.

To sum up, it was a very well organised show and the Y.A.F. Committee would like to thank all the many Y.A.A.S. members who gave their help as stewards, etc., and the Racecourse staff without whose help the Festival would have been so much more difficult to organise.

Left: Mr. Holmes of Castleford with award for "Fish of Fishes"

Below left: Sheaf Valley Aquarist Society's Realistic Bar

Below right: Mr. K. Blades of Bassetlaw receiving the trophy for Best Fish in Show

MARINE MASTER-BUILDERS

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it. Leaving the narrow end projecting above the surface of the sand (this aids respiration), the worm then excavates a further funnel to the surface. This second funnel serves to conduct the deposits from the surface, downward to the mouth of the worm. This species is most numerous in the sub-littoral zones of the shore, though it may occasionally appear in sandy pools higher up the shore and its empty tubes are often washed up following storms at sea.

Another interesting inhabitant of the lower shore is the Sand-mason, *Lanice conchilega*. Its tube is constructed from grains of sand, but it possesses a certain flexibility. Projecting a few centimetres above the sand in which it is buried, the mouth of the tube is fringed with branching filaments. When the tide is out this is all that may be seen of the worm or its home, for the Sand-mason withdraws deep underground when exposed to the air or endangered by a predator. The worm is 25 cms. in length, but its tube is much longer. It is a delicate animal with bright red gills which protrude from the tube when completely submersed in seawater. Unlike the majority of tube-worms, the Sand-mason does not filter the water for suspended material, but rather works its way through the nutritious detritus on the sand around its tube, collecting edible matter with its tentacles. The tentacles also collect particles of sand with which to build or renovate the tube. A type of mucus cements the particles together, and this is secreted from the "gland shields" on the worm's ventral surface. After mixing the sand with this secretion, the worm applies it to the tube, using its two-lobed lower lips.

A further type of tube-worm is that which lives in colonies. The fine, interweaving tubes of *Filograma implexa* are characteristic of this form, though the constructions of *Sabellaria alveolata*, the Honeycomb worm, are more immediately impressive. Each worm is no more than a few centimetres in length, but, in a colony, the tubes lying next to one another may be so numerous that they form a sort of miniature reef several metres across. Indeed, relatives of this worm living in the tropical seas off the coasts of Brazil and South Africa do form structures comparable to small reefs of coral. But even in our cold seas, the little Honeycomb worm reefs provide refuge for fish and other animals in much the same way as the coral reefs of the tropics, and marine animals will hollow out convenient nooks for themselves in the sandy structure.

Coldwater Fishkeeping

THE POND IN WINTER

by Arthur Boarder

THE WAY in which the garden pond is treated in winter can have a very marked effect on how it will function during the following year. The state of the water when winter arrives can have a very important effect on the health of the fishes in the spring.

Any medium or small sized pond will benefit from a thorough cleaning out once the leaves have fallen from surrounding trees or shrubs. Any pond will have an accumulation of mulm at the bottom which can tend to pollute the water, especially in this case if the water is frozen over for any length of time. When fishes have been well fed during the warmer months, there will certainly be a quantity of mulm on the bottom, composed mainly of droppings from the fishes.

When the pond is being cleaned out it is possible to examine the fishes while they are being housed out of the pond. It is possible that one or two may be found with fish lice or leeches on them. This is a good time to treat them and to make sure that they are healthy and not infested by any pests. It is possible to clean out any small or medium sized pond in one day. It is a good plan to start emptying the pond early in the morning so that the whole operation can be completed during that day. Small ponds may be emptied with a bucket and larger ones may need a small electric pump to do this task. If the pond is in such a position that there is lower ground away from it, it will be easy to extract much of the water with a hose using a siphon action. Place one end of the hose in the pond and take the other end towards the lower part of the garden. Now take this end towards the pond and pour in water while holding the end of the hose up as high as possible. When no more water will run into the end of the hose lower it quickly to the ground and the water should start to flow.

As the water lowers in the pond it will be possible to catch the fishes. Do not chase them around in the pond to excite them, but with patience they can be taken out once the water gets low. Too much pushing about with a net can stir up the mulm so the fishes cannot be seen. Use great care when handling the fish so that none of the mucus covering is disturbed. Keep the fish out of any sun and in shallow containers rather than in a deepish bucket. Give an occasional glance at the fishes to make sure that they are not in trouble.

It will be possible to prune any water plants as the water lowers. The underwater plants may need no attention as they are likely to have died down somewhat by this time of the year. Any water plants with stems or leaves above the surface can be cut down very hard, as they will look tidier for the winter if this is done. All dead or dying leaves on water lilies must be removed and if the plants have become too large for the pond, some of the root-stock can be cut away. It may be found that the lower part of the root-stock has become very hard and that there are no fresh shoots showing on it. This part can be cut away. Should it be required the root can be divided quite easily as long as there are new shoots showing on each division. Any pond-side plants which have become too rampant

can also be divided and only the younger parts kept for growing on.

Any black mulm from the bottom can be placed on the flower garden as a manure. If the pond has become overcrowded with water snails, now is a good time to remove many if not all of them. I have never found any useful purpose for water snails in a garden pond. Some people think that they act as scavengers, but many eat the water plants as well as any fish eggs which may be laid in the pond. Once a few water snails are introduced into a pond it is very hard to get rid of them when the occasion arises.

Once the pond has been cleaned out the containers of water plants can be inspected. It is probable that during the growing season, water lilies may have floated to the surface of the water. This can happen when the leaves on the surface exert a strong pull so that if the roots are not well anchored the whole plant will rise. I have found that a piece of paving stone tied securely to the plant container has been enough to weight the plant to the bottom.

Once the pond is refilled and plants and fishes back, there is no need to start feeding the fishes but remember that as the water temperature decreases, so will the appetites of the fishes do the same. It is possible to get the fishes through the winter without feeding them at all. Most fishes will eat a little even in the winter, but it will take much longer for them to digest the food as their metabolism will have slowed down considerably. I know that goldfish will eat even when there is ice on the pond, and I have known goldfish to eat earth worms at such times. However, it will be easier to get the fishes through the winter if no dried food is given at all. During a mild spell an occasional worm can be given, that is if one can be found. It is possible to keep earth worms for long periods, as long as they are kept very cold, in damp matter and in the dark.

There are many devices for preventing the water from frezing over completely and if a small heater, say about 100 watts can be placed in the water, I think that this idea is a good one. The heater need only be switched on when severe frost is expected. The small hole in the ice above such a heater will allow foul gases to escape and oxygen to enter. If the pond freezes over completely it is a good plan to open at least one part. This can be done by pricking a hole with a sharp pointed instrument. Do not hit the ice or you may stun the fish. Once the ice starts to melt it can be easily broken up and should be removed from the pond. The water may be found to have become discoloured and appear as beer-like fluid. This is a dangerous state and the water should be emptied and replaced with fresh.

There are several methods which have been put forward of preventing a pond from cracking when ice forms on it but they are mostly wishful thinking and serve no useful purpose. The idea that if the pond has a sloping side, the ice will slide up it is nonsense. Once the slightest film of ice forms nothing will make it move until it thaws. The idea that putting a log of wood or a rubber ball in the water will also prevent the pond from cracking, would not work, as once a little ice formed round the object the expansion an inch away from it would be nil. I have known an aerator to be used in the pond and this could help to keep a small hole open, as the water drawn up by the air bubbles would be slightly less cold than that on the surface and so might help. The aerator could not work unless a pump was working and this would have to be covered in case of rain, and so not very easy to adopt.

When ice has to be removed after a freeze-up it is rather difficult to do so if the underwater plants have been allowed to remain too near the surface of the water. Much could be lost with lumps of ice. Providing the water remains in good condition the cold will not harm the fishes. It has been said that fishes breed better when they have been subjected to cold during the winter. I do not know whether it is right or not as it is difficult to prove this point. However, I can state without fear of contradiction, that the fantails I have kept in tanks in a living room all the winter, have never spawned the following spring although of the same age and size as others in the garden pond which have spawned.

Once the pond has been cleaned out there must be nothing done to alter the condition. The obvious fault would be to give the fishes food which they did not eat. It is far safer to give no dried food at all during the winter months, than to have uneaten food on the bottom of the pond which could decay and upset the water. If any leaves are blown into the pond after it has been cleaned out, it is better to remove them to ensure that no trouble can be caused by leaving them there. Providing care is taken to keep the water in good condition, no fish should be lost. My method of keeping a hole in the ice on the pond has been to stand a water can of boiling water on it for a time. A neat, round hole will soon be formed and there will be no fear of the can falling into the water as the handle and spout would prevent this.

If at any time during the winter the water should develop a bad colour, most of it should be replaced with fresh. If snow falls on ice covering the pond, it must be removed as soon as possible. This can be done by sweeping it off or if the pond is too large for this, tap water can be thrown on it and the snow will soon melt. If the pond is allowed to stay for some days covered with snow, the water may become quite foul and the fishes will be in trouble.

THE LUNGFISHES

WITH SOME NOTES ON THE CARE OF ONE SPECIES IN CAPTIVITY

Written & illustrated by Jeff Jacobs

LUNGFISHES, as their name suggests, possess a 'lung'. This is in fact a modified swimbladder which enables the fish to breathe air directly from the atmosphere and not, as in most other fishes, obtain oxygen from the water by means of gills. Other fishes, however, such as Anabantids, snakeheads and knifefishes can also breathe directly from the atmosphere but their air-breathing organs are adaptations of the gills.

Lungfish deserve attention not only for their air-breathing ability but also for many other peculiarities which entitle them to be grouped in the Infraclass DIPNOI, distinct from the CROSSOPTERYGII (a group of extinct lobe-finned fishes represented today by the Coelacanth, *Latimeria chalumnae*) and the ACTINOPTERYGII which comprises all other bony fishes. Almost every species known to the fresh-water aquarist belongs to the latter group.

There are only six living species of DIPNOI, divided into two families, the Ceratodidae, which is represented by the Australian lungfish, *Neoceratodus forsteri*, and the Lepidosirenidae, represented by the South American *Lepidosiren paradoxa* and the African species, *Protopterus aethiopicus*, *P. amphibius*, *P. annectens* and *P. dolloi*. Of the extinct lungfishes, eight orders are recognised and many species.

The fossil record indicates that the DIPNOI first appeared in the Devonian period (about 350 million years ago), reached their peak during the Carboniferous and Permian and began to go into a decline at the start of the Triassic (about 190 million years ago). At the height of their evolutionary radiation, they showed adaptations to a wide range of habitats and diets although the majority evolved a crushing and shearing dentition and had a world-wide distribution that included England.

The modern lungfishes show a degeneration of fins, reduction in armour and have lost the heterocercal tail (a tail shaped like that in sharks). The Australian lungfish (*Neoceratodus*) most closely resembles the ancestral stock.

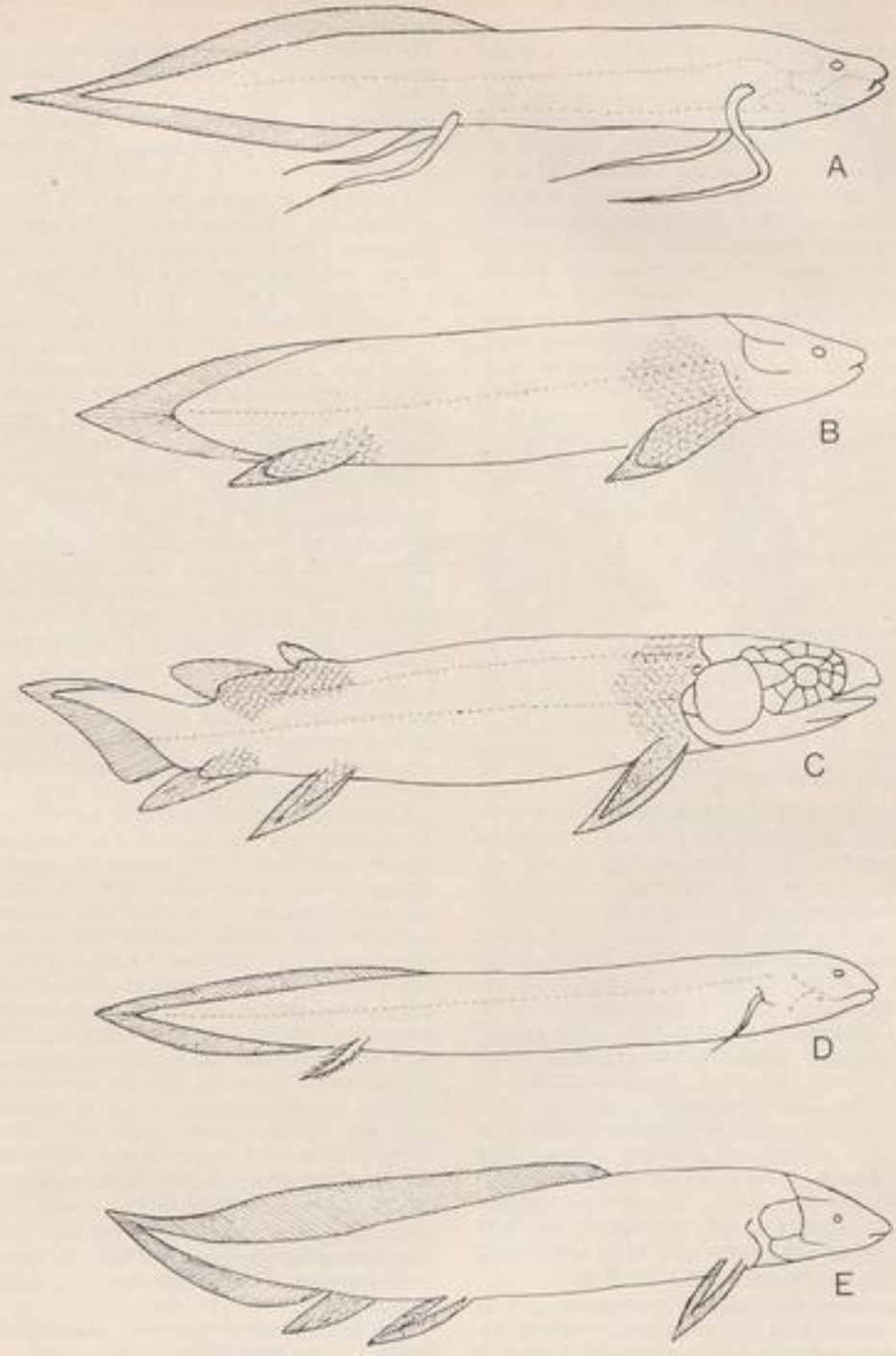
There are certain superficial and anatomical resemblances that have led some zoologists to believe that the DIPNOI were ancestral to at least the URODELE tetrapods (i.e. salamanders, newts etc.), although more recent research has shown that the resemblance is merely due to convergent evolution. It is more likely that the DIPNOI are related to the CROSSOPTERYGII and that it is the latter that were instrumental in the evolution of the land vertebrates.

The present-day range of the lungfishes is restricted; *Lepidosiren* lives in parts of Brasil, Bolivia and Paraguay, *Protopterus* inhabits most of Africa except the northern part, and *Neoceratodus*, now protected by law due to its scarcity, is confined to parts of the Mary and Burnett rivers in north Queensland, Australia.

The internal anatomy of the DIPNOI is basically like that of other bony fishes, with a few specializations. The teeth consist of paired upper and lower plates which form an efficient cutting and crushing mechanism for their basically predatory diet. The swimbladder functions as a lung; it is divided into two halves (except in *Neoceratodus*) one on each side of the oesophagus. The walls of these lungs are covered with alveoli (air sacs) richly supplied with blood-vessels. Nevertheless, lungfish do have gills through which CO_2 is given off in the form of bubbles and they probably use them to supplement the lung. The gills are covered by the opercula which are layered with scales and a coating of mucus; the gill-slits are just in front of the pectoral fins. They also possess a notochord (an unjointed rod of turgid tissue) which is present in the embryonic stages of all bony fishes but which in the lungfish persists in the adults as part of the

Key to outlines on page 327.

Living and extinct lungfishes
A. *Protopterus aethiopicus*
B. *Neoceratodus forsteri*
C. *Dipterus oervigi*, (Devonian)
D. *Lepidosiren paradoxa*
E. *Phaneropleuron andersoni*, (Upper Devonian)


A
B
C
D
E

vertebral column.

Anyone handling a lungfish will realise that it is very slippery; this is due to the copious secretion of mucus that it produces. The function of this is to protect the animal's skin and to aid in the process of aestivation—that is, a form of hibernation which protects the fish from desiccation. This mucus is composed mainly of silica (SiO_2) and Calcium oxide (CaO). Only *Lepidosiren* and *Protopterus aethiopicus*, *annectens* and *dollei* are known to aestivate; there is no information available on *P. amphibius*, and *Neoceratodus* does not aestivate and cannot tolerate drought. Of the species known to do so, *P. aethiopicus* rarely does so, since serious drought conditions rarely occur in the area which it inhabits, whilst the others all aestivate regularly. At the start of the dry season, the fish burrows a tunnel in soft mud, and, using its mouth and body it widens the lower end and turns so that its head is near to the surface. When the upper end begins to dry out, the fish secretes large amounts of mucus, which mixes with silt to form a cocoon around its body leaving a perforation at the upper end through which the fish can breathe. The metabolic activity is greatly reduced and the fish obtains energy from the body tissues, particularly the muscles. Incidentally, *P. aethiopicus* have been kept for 600 days without food; after 7 days the matabolic rate was 50% of normal and after 300 days was 15%. When the rains return the mud and cocoon is softened, and the lungfish breaks out. In *Lepidosiren* no cocoon is formed, just a deep burrow in the mud being made. *Protopterus annectens* has been known to survive for four years in a state of aestivation. When resuscitated the fish, although slightly 'crumpled', soon resumed normal feeding and behaviour.

Brood care is practised by four species; once again no information is available on *Protopterus amphibius* and *Neoceratodus*. *Protopterus aethiopicus* and *P. annectens* dig a pit or hole along river banks, reedy shores or in swamps. The male does this and entices a female into the nest where mating takes place. He may mate with as many as three females. The male is left to aerate the water in the nest by movements of his body and he protects the young by snapping at anything that comes near. The nest of *Protopterus dolloi* is more elaborate, being a closed burrow in swampy soil much the same as that of *Lepidosiren*. An interesting point is that the male *Lepidosiren* develops highly vascularised filaments on the pelvic fins during the breeding season. The function of these is known to be something to do with oxygenation; they may supply the water surrounding the young with oxygen or they may supply oxygen to the male to reduce the number of trips he has to make to the surface, leaving the young unguarded.

When the young hatch the larvae have very little yolk and bear a striking resemblance to newt tadpoles since they have four pairs of external gills (except in *Neoceratodus*, where they do not develop) which disappear on metamorphosis, although in certain species of *Protopterus* they remain as internal vestiges. The bichirs (*Polypterus* and *Calamoichthys*) also have larvae which possess external gills. Some other fishes, notably Mormyrids and *Heterotis*, a relative of the Arowana, have been described as having external gills but these are merely long internal filaments projecting to the exterior.

I was lucky enough to be given a 24 inch specimen of *Protopterus aethiopicus* by a friend whose tank it had outgrown. On arriving home I placed it in a 48 in. × 18 in. × 15 in. tank with a 1 in. layer of gravel. I should stress that this is by no means cruel since these fish are very sluggish and require little space; however, plans are now in hand for a substantially larger tank. Every other day all the water is siphoned off and replaced with fresh water and every week the gravel is also siphoned off, cleaned and returned. No means of heating or filtration are used; such items would be smashed to pieces anyway! The room in which the tank is situated is constantly kept at a temperature of 66°F by a paraffin heater. The tank is covered at all times and the fumes seem to have no adverse effect on the fish. The tank is by a window which is the only source of light; again a tube or bulb would shatter if 'playfully' splashed with a couple of gallons of water by the fish when attempting to snatch a piece of meat from my fingers!

The fish is still adolescent, although water changing and very heavy feeding have increased his size from 24 in. (September 1st, 1975) to 34 in. (July 10th, 1976) —a good growth rate?—and he should be fully grown at about 50 in. or so.

The other *Protopterus* species vary from between 30 in. and 45 in. when adult, as does *Lepidosiren*, while *Neoceratodus* has been known to reach 66 in. Breathing takes place about every 5-8 minutes, often being accompanied by a sound like a waste-disposal unit, with the mouth wide open giving an excellent opportunity for observing the tooth plates. It eats any sort of meat, from spam to steak, which it either snaps at as I drop it, discharging water everywhere, or misses and searches for along the gravel. The eyes are very small and weak, and the fish has to search for food by olfaction. From the side the appearance is rather eel-like, but viewed from the top it becomes obvious that the fish is very stout bodied. The back is marbled blue-black, changing to a dirty white around the head and sides. The belly is red-brown and the tail flecked with blue and white.

In conclusion I would be very pleased to hear from anyone who has any species of lungfish (they may have been imported under some other name) in order to compare notes.

My address is: 5, Normand Mansions, Normand Road, London W14 9RA.

Triturus alpestris

by H. G. B. Gilpin

It was whilst spending a few weeks, one August, at Unterwasser, 3,000 feet up in the Swiss Alps, that I first encountered Alpine Newts, *Triturus alpestris*, living under entirely natural conditions.

One day, having driven along the Linthkral Canal from Lake Zurich towards Nafelo, I turned off the main route and ascended along four miles of very winding road into the mountains to Obersee. After parking the car, I walked over the grassy banks of the almost dried up river bed separating the lake from the forested mountain sides.

A great many Viviparous Lizards were in evidence, mainly young ones, ranging from one to two inches in overall length. I did not collect any of these, owing to the difficulty in obtaining sufficient minute insects to support them until I returned to England. Three adults were found sunning themselves on a long, recumbent tree trunk, secured and transported safely in polythene bags half filled with dry moss.

Examination of the underside of the tree trunk revealed examples of *Rana temporaria* and *Bufo bufo*. Frogs and toads generally were frequently observed in this and other areas visited during my stay in the Swiss Alps, their abundance no doubt largely explained by the profusion of insect life, particularly beautiful, black banded, emerald green grasshoppers with a red stripe on the lower edges of the femurs of their elongated hind legs. Most of these were not fully adult, probably in the fourth instar stage, and presumably provided ample food supplies for both lizards and amphibians.

It was whilst turning over fairly heavy sections of fallen trees that I caught sight of my first Alpine Newts in their native habitat. Exposure of one dampish spot revealed three of them, a male and two females, curled up together. They showed little response to being disturbed and were easily secured.

Although Alpine Newts, the most colourful of European species, often finish breeding by the end of May, reproduction is delayed until the end of summer in high altitudes, the young, in spite of becoming sexually developed, sometimes remaining in the larval stage until the next year. My three, however, were no longer in breeding condition. Their dorsal surfaces were dark, marbled, greyish black and undersides a vivid red.

In the breeding season the males grow low, black spotted, yellow crests and their sides turn yellow speckled with black, their lower borders being enriched with blue stripes. Their underparts remain permanently red. The males are smaller than the duller-hued females and measure between two and three-quarters and three inches in length. The females often reach four inches and in exceptional cases four and a half inches.

The three Alpine Newts were brought back to England together with a frog, *Rana esculenta*, caught on the day we crossed over the border into Austria and visited Lake Constance. The surrounding area was broad, flat and boggy with many ditches and extensive reed beds. Edible frogs were very numerous as were their three to three and a half inches long brown spotted, olive tadpoles.

All four amphibians travelled in polythene bags packed with damp moss and reached England five days after the urodeles were first caught, all of them in excellent condition.

They were immediately transferred to an unheated and well established glass-sided vivarium three feet long by fourteen inches wide and fourteen inches high inhabited by three Crested Newts, *Triturus cristata*, and a pair of common toads, *Bufo bufo*. The female of this pair was a long time resident and is still alive after many years in my possession. She was an adult when originally caught and to my knowledge must now be at least ten years old. For many years I used her as a demonstration animal for biology lessons, a chore she faced with apparent

equanimity, making no attempt to escape but merely blowing herself up to maximum size and occasionally depositing a small pool of water on the bench as a mark of mild displeasure.

The floor of the vivarium was thickly covered with close growing moss pressed down on to a base of soil four inches deep at one side and two inches deep at the other. This presented a flat area at one end, on which was placed a large rounded stone, gently sloping to a level space at the other. A little concrete pool, about eight inches by four inches by two inches deep was sunk in the lower section. The moss ultimately became bedraggled and, as a result of water splashed over it by the animals' activity in the water vessel, somewhat muddy. This was rectified by replacing it with fresh supplies every couple of months.

The arrangement suited all the amphibians admirably and some were on view at almost any hour of the day. The Alpine Newts were the most retiring of them all and spent a great deal of time buried beneath the moss, only occasionally visiting the water or moving around the open parts of their quarters. The conditions evidently suited them very well, as although the *Rana esculenta* only survived for two and a half years, the Alpine Newts were still fat and healthy five years later.

Feeding presented no difficulties. The toads took adult locusts from time to time and the frog accepted locust hoppers. All the creatures fed freely on small earthworms and half to one inch long slugs, which were supplied every other day.

THE BLACK GHOST KNIFEFISH

by Barry Black

This is a seldom imported species which comes under the common name of Black Ghost Knifefish although it is not the true Black Ghost. Ghost usually refers to fish that are translucent or white in appearance but in this fish ghost refers to the fact that the natives believe that their spirits inhabit these fish when they die. *Apteronotus* (formerly *Sternarchus*) *leptorhynchus* along with the other nine species in the genus, hail from the Amazonian river system where they inhabit the quiet backwaters and lakes under roots, logs and in weedbeds. It is a nocturnal fish and hunts at night using weak electrical impulses for navigation and location of prey, since its eyes are poorly developed. The most distinguishing feature of this genus is the long filamentous dorsal fin and the presence of a caudal fin which is most unusual in knife-fishes. The anal fin is extremely long, containing about 150 rays and is the main form of propulsion. By undulating the anal fin the fish can move forward and by reversing the undulations it can travel backwards with the same ease. Due to its streamlined shape it can attain speed in both directions and so can approach its prey with the minimum of body movement. Also it can escape from predator or fish net by reversing rapidly, making it difficult to catch.

Apteronotus leptorhynchus is a chocolate brown colour and, because it has small scales, has a velvety appearance. A creamy-coloured stripe extends from the snout along the back to the caudal where there is another cream band on the caudal peduncle. The anal fin rays are brown with a clear membrane and the anal opening is very far forward, just behind the gills. The filamentous dorsal fin is seldom displayed as it is usually depressed into a groove along the back of the fish. No ventral fins are present.

Feeding presents no problem as this fish will eat almost anything, including all types of worms and insects, raw meat, small fish and prawns. It has no teeth but hard jaws and pharyngeal bones, so when a worm is taken it is drawn in and out rapidly while being bitten and then chewed up. These knifefishes are shy at first but can be tempted out of hiding if food is offered and if the tank is dimly lit. Because of their nocturnal habits they must be fed when the lights have been turned off. This is so they will not starve due to the other inhabitants taking all the daytime food.

A. leptorhynchus is not a community fish as it exceeds 10 inches in length and has a large appetite but it does live well with other, not too aggresive, large fish. This knifefish prefers temperatures slightly higher than most fish, approximately 78°F-84°F, as it is sensitive to chills. It also seems better in slightly acidic water with little water movement. It is not aggressive but quarrels do break out between rival knifefishes so I advise one specimen to one tank.

News from AQUARISTS' SOCIETIES

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

RESULTS of the **Priory A.S.** open-show which was held in September were as follow:—Male Guppy: 1, E. and M. Perkin (Ashington); 2, Miss P. Knibbs (Stockton); 3, A. Wright (Independent). Female Guppy: 1, A. Duncanson (Priory); 2, D. Smith (Killingworth); 3, A. Wright (Independent). Mollies: 1, D. Campbell (Mount Pleasant); 2, Mr. and Mrs. Mackenzie (Priory); 3, Mr. Pells (Priory). Platies: 1, Mr. Clegg (Novos); 2, E. Smee (N.T.F.S.); 3 Mr. and Mrs. Robson (N.T.F.S.). A.V. Swordtail: 1, J. English (N.T.F.S.); 2, D. Hammon (South Shields); 3, S. Todd (Priory). Small Barbs: 1 and 2, Mr. and Mrs. Robson (N.T.F.S.); 3, A. Walton (Priory). Large Barbs: 1, E. Conely (Priory); 2, G. Quantrill (Priory); 3, M. Hunt (Killingworth). Small Characins: 1, Mr. Pells (Priory); 2, F. Myers (Independent); 3, A. Costin (Priory). Large Characins: 1, F. Myers (Independent); 2, T. Dixon-Cave (South Shields); 3, A. Duncanson (Priory). Small Cichlids: 1, J. Middlemast (Stanley); 2, L. Southall (South Shields); 3, F. Napier (South Shields). Large Cichlids: 1, M. Campbell (Mount Pleasant); 2, A. Costin (Priory); 3, L. Hendson (South Shields). R/V. Cichlids: 1, Mr. Wright (Independent); 2 and 3, C. A. Enright (South Shields). Angels: 1, D. Smith (Killingworth); 2, G. Quantrill (Priory); 3, Mr. Wright (Independent). A.V. Fighter: 1, R. Kirkup (Mount Pleasant); 2, E. M. Perkins (Ashington); 3, P. Carman (Priory). Sharks, Labeo, Flying Fox: 1, Mr. and Mrs. Wright (South Shields); 2, M. Campbell (Mount Pleasant); 3, Mr. and Mrs. Renton (N.G.L.S.). A.V. Labyrinth: 1, P. Redman (Hartlepool); 2, M. Snetton (Hartlepool); 3, A. Costin (Priory). Rasboras, Danio, Minnows: 1, Mr. and Mrs. Robson (N.T.F.S.); 2, A. Wright (Independent); 3, J. Pells (Priory). E.L.T.C.: 1, G. Quantrill (Priory); 2, E. Pyratrick (Ashington); 3, J. Pells (Priory). Corydoras and Brochis: 1, A. Weir (Hartlepool); 2 and 3, Mr. Risbridger (Novos). A.O.V. Catfish: 1, Mr. Risbridger (Novos); 2, R. Burns (South Shields); 3, Mr. and Mrs. Kidd (Killingworth). Loach: 1, S. Todd (Priory); 2, F. Myers (Independent); 3, A. Wright (Independent). Breeding Pairs (Livebearer): 1 and 2, Mr. and Mrs. Renton (N.G.L.S.); 3, T. Dixon-Cave (South Shields). Breeding Pairs (Egglayer): 1, T. Baynton (Priory); 2, F. Myers (Independent); 3, F. Napier (South Shields). Breeders Class (Livebearer): 1, Mr. and Mrs. Renton (N.G.L.S.); 2, R. Kirkup (Mount Pleasant); 3, J. English (N.T.F.S.). Breeders Class (Egglayer): 1, E. Pyratrick (Ashington); 2, Mr. and Mrs. Smith (Killingworth. A.O.V. Tropical Livebearer: 1, and 3, T. Marshall (N.T.F.S.); 2, X. Marshall (N.T.F.S.). A.O.V. Tropical Egglayer: 1, L. Southall (South Shields); 2, J. Middlemass (Stanley); 3, K. Alder (Hartlepool). A.V. Coldwater: 1, E. Hodgson (Priory); 2. A. Walton (Priory); 3, A. Duncanson (Priory). Furnished Jars: 1, A. Duncanson (Priory); 2, T. Baynton (Priory); 3, N. Thompson (Wallsend A.S.). Plants: 1, A. Duncanson (Priory); 2 and 3, W. Walton (Priory). Best Fish in Show award was won by L. Southall (South Shields A.S.), with a Mono Dactylus Sebea.

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DURING September, the **Port Talbot and District A.S.**, entertained **Newport A.S.** in a friendly inter-club match, and were beaten by 28 points to 14 points, the Livebearers section letting Port Talbot down very badly; but congratulations to Newport on a well deserved victory. While judging was in progress a quiz was held between the two clubs, conducted by Port Talbot club chairman Mr. J. Egan. Newport also emerged winners in this field. Results:—Egglayers: 1, B. Fouracre (P.T.); 2, R. Beale (N.); 3, R. Dore (N.); 4, Miss C. Rupert (P.T.); 5, C. Shoet (N.); 6, Mrs. E. Jones (P.T.). Livebearers: 1, 2 and 5, R. Dore (N.); 3, R. Beale (N.); 4, B. Fouracre (P.T.); 6, C. Morrison (P.T.). K.O. Egglayers: 1, R. Beale (N.); 2, W. Gibbon (N.); 3, Mr. and Mrs. R. L. Cotton (P.T.); 4, B. Fouracre (P.T.). K.O. Livebearers: 1 and 2, C. Morrison (P.T.); 3, Mr. and Mrs. T. Edwards (P.T.); 4, B. Fouracre (P.T.).

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OPEN Show results of **Blackburn Aquarist Waterlife Society** held in September were:—Guppies: 1, N. Wallbank (Loyne); 2, Mr. Morris (F.G.A.); 3, Mr. and Mrs. Petty (Castleford). Platies: 1, Mr. and Mrs. Houghton (Southport); 2, Mr. and Mrs. Muckle (Southport); 3, Mr. and Mrs. Baldwin (Sandgrounders). Mollies: 1 and 3, Mr. and Mrs. Tinsley (Sandgrounders); 2, Mr. and Mrs. Petty (Castleford). A.O.V. Livebearers: 1, Mr. and Mrs. K. McBride (Aireborough); 2, Mr. and Mrs. B. McCombe (Blackburn); 3, Mr. and Mrs. Muckle (Southport). Swordtails: 1, Mr. and Mrs. Houghton (Southport); 2, A. Squirrell (W.A.D.A.S.); 3, I. Crabtree (Osram). Small Characins: 1, K. Thompson (M.A.S.); 2 and 3, Mr. and Mrs. Muckle (Southport). Large Characins: 1, Mr. and Mrs. Houghton (Southport); 2, Mr. and Mrs. Baldwin (Sandgrounders); 3, Mr. and Mrs. Ham (Lytham). Dwarf Cichlids: 1, Mr. and Mrs. Agar (Aireborough); 2, P. I. Payne (Merseyside); 3, Master M. N. Rimmer (Sandgrounders). Large Cichlids: 1, Mr. and Mrs. Taylor (Merseyside); 2, B. Gudgeon (Independent); 3, C. Evason (Sandgrounders). Angel Fish: 1 and 2, Mr. and Mrs. Muckle (Southport); 3, A. Oldham (W.A.D.A.S.). Small Barbs: 1, M. Lawson (St. Helens); 2, Miss M. Burton (Accrington); 3, Mr. and Mrs. Burton (Accrington). Large Barbs: 1, A. Oldham (W.A.D.A.S.); 2, P. I. Payne (Merseyside); 3, K. Taylor (Loyne). Toothcarps: 1, Mr. and Mrs. Taylor (Merseyside); 2 and 3, R. Barkley (Merseyside). Minnows: 1, P. A. Bhabata (Blackburn); 2, Mr. and Mrs. Muckle (Southport); 3, Mr. and Mrs. Houghton (Southport). Danios: 1, R. J. Stephens (Blackburn); 2, W. Wallbank (Loyne); 3, A. Bolan (W.A.D.A.S.). Rasboras: 1, Mr. and Mrs. Muckle (Southport); 2, N. Wallbank (Loyne); 3, K. Thompson (M.A.S.). Fighters: 1, 2 and 3, T. E. Davies (Heywood). Small Anabantids: 1, Mr. and Mrs. Muckle (Southport); 2, Mr. and Mrs. Petty (Castlefeod); 3, Mr. and Mrs. Newton (Blackburn). A.O.V. Anabatids: 1, Mr. and Mrs. Newton (Blackburn); 2, Mr. and Mrs. Muckle (Southport); 3, Mrs. K. McBride (Aireborough). Flying Foxes: 1, D. Rowe (Bridgewater); 2, R. I. Payne (Merseyside); 3, R. Barkley (Merseyside). Sharks: 1, Mr. and Mrs. Baldwin (Sandgrounders); 2, R. I. Payne (Merseyside). Egglayers (Pairs): 1, R. J. Stephens (Blackburn); 2, Mr. and Mrs. Petty (Castleford); 3, Mr. and Mrs. Muckle (Southport). Livebearers (Pairs): 1, Mr. and Mrs. Baldwin (Sandgrounders); 2, P. Squirrell (W.A.D.A.S.); 3, Mr. and Mrs. Tinsley (Sandgrounders). Breeder Livebearers: 1, Mr. and Mrs. Agar (Aireborough); 2, C. Erason (Sandgrounders); 3, Mr. and Mrs. Durham (Independent). Breeder Egglayers: 1, J. Bate (Sandgrounders); 2, R. Dingley (Heywood); 3, Mr. & Mrs. Burton (Accrington). Coldwater Breeders: 1, S. Foote (Accrington); 2, Mr. and Mrs. Tasker (Sandgrounders); 3, Mr. Dingley (Heywood. Loaches: 1 and 2, Mr. and Mrs. Muckle (Southport); 3, Mr. and Mrs. Ham, Lytham. Corydoras: 1, Miss M. Burton (Accrington); 2, Mr. and Mrs. Petty (Castleford); 3, Mr. and Mrs. Muckle (Southport). A.O.V. Catfish: 1, K. Thompson, (M.A.S.); 2, P. M. Batchelor (Loyne); 3, Mr. and Mrs. Houghton (Southport). Junior Livebearers: 1, Misses A. and L. Petty (Castleford); 2, Miss J. Baldwin (Sandgrounders); 3, Miss S. McBride (Aireborough). Junior Egglayers: 1 and 2, P. and S. Taylor (Merseyside); 3, C. Riley (W.A.D.A.S.). A.O.V. Tropical: 1 and 3, P. H. Batchelor (Loyne); 2, Mr. and Mrs. Petty (Castleford). Marine: 1, P. Squirrell (W.A.D.S.). Common Goldfish: 1 and 3, Mr. and Mrs. Wolstenholme (Blackburn); 2, R. Dingley (Heywood). Veiltails: 1, Mr. Duckworth (Independent); 2, S. Foote, (Accrington). Fantails: 1, S. Walsh (Accrington); 2, S. Foote (Accrington); 3, R. Dingley (Heywood). A.O.V. Fancy: 1 and 2, S. Foote (Accrington); 3, Mr. and Mrs. Wolstenholme (Blackburn). A.O.V. Coldwater: 1 and 3, Mr. and Mrs. Wolstenholme (Blackburn); 2, Mr. and Mrs. Newton (Blackburn). Shubunkins: 1, S. Foot, (Accrington); 2, R. Duckworth (Independent); 3, Mr. and Mrs. Wolstenholme (Blackburn). Moors: 1 and 3, S. Foote (Accrington); 2, Mr. Dingley (Heywood).

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WINNERS of the annual trophy competition at the September meeting of the **Llantwit Major A.S.** were as follow:—A.O.V. Egglayers: 1 and 3, Mr. and Mrs. M. C. Guthrie; 2 and 5, G. Best; 4, J. Thomson. A.O.V. Livebearers: 1, G. Best; 2 and 4, A. Ibbertson; 3, G. Lewis; 5, M. Eady. Breeders Egglayers: 1, 2 and 3, A. Ibbertson; 4, M. Eady. Breeders Livebearers: 1, J. P. Edwards; 2 and 3, A. Ibbertson; 4, G. Lewis. Most points of the year: Mr. and Mrs. M. C. Guthrie. Member of the year H. Chick. Judges: R. S. Wigg, R. J. Richards, R. Smith.

While the judging was in progress members were entertained by club member "B" class judge G. Best with a lecture covering all aspects of the fishkeeping hobby.

New members will be welcomed at the Red Dragon Club, St. Athan, on the second Monday of each month.

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RESULTS of the second open show of the **Wythenshawe & District A.S.** held in September were:—Guppies: 1, J. Redfern (Heywood); 2, A. Bibby (Wythenshawe); 3, Mr. and Mrs. Campbell (Macclesfield). Mollies: 1, J. Tinsley (Sandgrounders); 2, P. A. Squirrel, (Wythenshawe); 3, Mr. and Mrs. Campbell (Macclesfield). Swordtails: 1, T. Faux (Merseyside); 2, Mr. and Mrs. Selby (Wythenshawe); 3, P. A. Squirrell (Wythenshawe). Platies: 1, Mr. and Mrs. Muckle (Southport); 2, B. W. Carter (St. Helens); 3, H. Buckley (Northwich). A.O.V. Livebearer: 1, Miss G. McBride (Aireborough); 2, Mr. and Mrs. Tasker (Sandgrounders); 3, Mr. and Mrs. Agar (Aireborough). Large Anabantids: 1, Mr. and Mrs. Muckle (Southport); 2, Mr. and Mrs. Goddard (Macclesfield); 3, Mr. and Mrs. Ellis (Osram). Small Anabantids: 1, Mr. and Mrs. J. Taylor (Merseyside); 2, Mr. and Mrs. Muckle (Southport); 3, A. McDonnell (Oldham). Fighters: 1, Mr. and Mrs. Tomlinson (Macclesfield); 2 and 3, B. Faux (Merseyside). Large Cichlids: 1, J. Ridley (Heywood); 2, J. Faux (Merseyside); 3, Mr. and Mrs. J. Taylor (Merseyside). Small Cichlids: 1, Mr. and Mrs. Agar (Aireborough),

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Best in Show; 2, N. and M. Rimmer (Sandgrounders); 3, Miss Goddard (Macclesfield). Angels: 1 and 2, Mr. and Mrs. Muckle (Southport); 3, K. Wright (Sandgrounders). Rift Valley Cichlids: 1, E. M. Stillwell (Sandgrounders); 2, D. Mason (Bridgewater); 3, C. Freeman (Heywood). Large Characins: 1, T. and J. Selby (Wythenshawe); 2, B. and S. Parr (Hyde); 3, N. and M. Rimmer (Sandgrounders). Small Characins: 1, Mr. and Mrs. Goddard (Macclesfield); 2, B. and S. Parr (Hyde); 3, A. Toombs (Wythenshawe). Large Barbs: 1, Mr. and Mrs. Goddard (Macclesfield); 2, M. Hay (Oldham); 3, Mrs. E. Winstanley (Runcorn). Small Barbs: 1, J. Buckley (Northwich); 2, Mr. and Mrs. Muckle (Southport); 3, A. Chadwick (Oldham). Rasboras: 1, T. Fish (Heywood); 2, Mr. and Mrs. Muckle (Southport); 3, T. and J. Selby (Wythenshawe). Danios: 1, P. A. Squirrell (Wythenshawe); 2, Mr. and Mrs. Ellis (Oxram); 3, M. Hay (Oldham). Minnows: 1, M. Hay (Oldham); 2, Mr. and Mrs. Muckle (Southport); 3, D. and J. Bates (Sandgrounders). A.O.V. Tropical: 1, Mr. and Mrs. Baldwin (Sandgrounders); 2, M. Hay (Oldham); 3, J. Ridley (Heywood). Labeos and Sharks: 1, Mr. and Mrs. Baldwin (Sandgrounders); 2, Mr. and Mrs. Gough (Wynnstay); 3, W. Clarke (Wythenshawe). Foxes: 1, E. Hampson (Wythenshawe); 2 and 3, T. and J. Selby (Wythenshawe). Corydoras and Brochis: 1, Mr. and Mrs. Muckle (Southport); 2, Mr. and Mrs. Harvey (Sandgrounders); 3, B. W. Carter (St. Helens). Loaches: 1, Mr. and Mrs. Muckle (Southport); 2, S. Wolstenholme (Heywood); 3, M. Rimmer (Sandgrounders). A.O.V. Catfish: 1, Mr. and Mrs. Gough (Wynnstay); 2, Mrs. Freer (Partington); 3, F. Mulla (Merseyside). Livebearers, pairs: 1, Mr. and Mrs. Selby (Wythenshawe); 2, P. A. Squirrell (Wythenshawe); 3, J. Tinsley (Sandgrounders). Egglayers, pairs: 1, J. Buckley (Northwich); 2, Miss L. Oldham (Wythenshawe); 3, Miss G. Goddard (Macclesfield). A.V. Marine: 1 and 2, J. Midgley (B.M.A.A.); 3, P. A. Squirrell (Wythenshawe). Toothcarps:—A.V. Killifish: 1, Mr. and Mrs. Taylor (Merseyside); 2 and 3, G. Wood (B.K.A.). Breeders Teams:—Egglayers (1—10): 1 and 3, P. A. Squirrell (Wythenshawe); 2, R. Dingley (Heywood). Egglayers (11—20): 1, Mr. and Mrs. Tasker (Sandgrounders); 2, J. Ridley (Heywood); 3, R. Iddon (Sandgrounders). Livebearers (1—10): 1, Mr. and Mrs. K. Agar (Aireborough); 2, Mr. and Mrs. R. Durham (Independent); 3, H. Buckley (Northwich). Juniors Livebearers: 1 and 2, P. A. Squirrell (Wythenshawe); 3, M. Burgoyne (Bridgewater). Juniors Egglayers: 1, Miss P. Taylor (Merseyside); 2, Miss Freer (Partington). Juniors Coldwater: 1, A. Whittaker (Macclesfield); 2, C. Rielly (Wythenshawe); 3, Misses P. and S. Taylor (Merseyside). Ladies Livebearers: 1, Mrs. K. McBride (Aireborough); 2, Mrs. P. A. Taylor (Merseyside); 3, Miss L. Oldham (Wythenshawe). Ladies Egglayers: 1, Mrs. Goddard (Macclesfield); 2, Mrs. Baldwin (Sandgrounders); 3, Mrs. Gough (Wynnstay). Ladies Coldwater: 1, Mrs. P. A. Taylor (Merseyside); 2, Mrs. Goddard (Macclesfield). Orandas: 1, Mr. and Mrs. Harvey (Sandgrounders); 2 and 3, R. Dingley (Heywood). Lion Heads: 1, Mr. and Mrs. Harvey (Sandgrounders); 2, P. A. Squirrell (Wythenshawe). Orfe: 1, Mr. and Mrs. J. Taylor (Merseyside). Bass: 1, J. Buckley (Northwich). A.O.V. American: 1, Mr. and Mrs. Baldwin (Sandgrounders). A.O.V. European: 1, T. Dentith (Wythenshawe); 2 and 3, J. Ridley (Heywood). A.V. Japanese Koi and Hi Goi: 1, S. Nixon (Wythenshawe). Mini-Jars: 1 and 3, E. Jones (Wrexham); Masters N. and M. Rimmer (Sandgrounders). Coldwater:—Common Goldfish: 1, B. Newport (Runcorn); 2, R. Dingley (Heywood); 3, S. Nixon (Wythenshawe). London Shubunkins: 1, F. Riddeough (Wythenshawe); 2, J. Pennington (Wythenshawe); 3, T. Redfern (Heywood). Bristol Shubunkins: 1, B. Newport (Runcorn). Fantails: 1, B. Newport (Runcorn); 2 and 3, R. Dingley (Heywood). Moors: 1, R. Dingley (Heywood).

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THE September meeting of the **New Forest A.S.** was well attended, the main item of the evening being a Quiz by Mr. B. Higginson. Table Show Results were:—Swordtails: 1 and 3, C. Head; 2 and 4, P. Norup. Cichlids: 1, N. Gallear. Goldfish: 1, 2 and 3, P. Menhennett; 4, A. R. Travers. The trainee judge was Mr. D. Jackson from Salisbury A.S.

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TABLE show results at the September meeting of the **Clwyd A.S.** were as follow: 1, K. Taylor; 2 (joint), R. Jones and D. Martin; 3, T. A. Davies.

The Society meets at 8.0 p.m. on the second Monday of each month, at St. Paul's Church Institute, Rhiw Road, Colwyn Bay. New members would be most welcome. The Secretary is T. A. Davis, 42 Maes Hyfryd, Glan Conwy, Colwyn Bay, Clwyd, N. Wales, LL28 5NE.

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IN September the Annual General Meeting of the **Dorchester & District A.S.** was held when the following officers were elected: President: H. W. Cornick, Chairman: N. Derrick, Secretary: C. G. Ackerman, 2 Hawthorne Road, Dorchester, Dorset; Treasurer: Miss D. Payne, Show Secretary: Mrs. C. Ackerman, Committee: G. Fox, D. Young, R. Hawker, M. Jury, R. Christopher, G. Moorcroft; Auditor: A. Hobbs.

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AT the final meeting in September of the **Rhondda A.S.** four committee members, namely G. Legge, B. Ashcroft, M. Parsons, W. Evans, resigned through an incident, may it be added, not of their own choosing.

However at a meeting of the remainder of the committee, and on the insistence of the members, thanks were expressed to the four committee members who have now resigned for the work that they put into the Club. The new Show Secretary is A. Smith, 12 Glannant Street, Penycraig, Rhondda, Glamorgan, and the Secretary is now D. Richards, 37 Leslie Terrace, Llwyncelyn, Rhondda, Glamorgan.

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RECENT fund raising activities of the **Mid-Sussex A.S.** have included a sponsored swim and also a jumble sale.

It was pleasing to see an increase in the number of fish benched for the September table show. This was judged by H. Armitage, of the Havant club, who awarded the prizes as follow:—Barbs: 1, B. Stanger; 2, E. and T. Tester; 3, B. Burtles. Dwarf Cichlids: 1, E. and T. Tester; 2, A. Temple; 3, S. Frost. A.O.S. Cichlids: 1, 2 and 3, Mr. and Mrs. Houghton. Further details may be obtained from the secretary, Mr. B. Slade, Sundown, Bolney Road, Anstye (H. Heath 53747).

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THE first Annual General Meeting of the **Bolton Gunners A.S.** was held recently when the following committee was elected: N. Emerson, president; D. Willett, chairman; E. Calow, vice-chairman; Mrs. G. B. Crompton, secretary; A. Hughes, treasurer; G. Knee, show secretary, assisted by J. W. Smith. Mr. C. Emerson is President of the Junior Section, which is in the process of being organized.

Meetings are being held every second Wednesday commencing on the 6th October for the second year's events. The Vulcan Inn, Junction Road, Deane, Bolton, is the venue and the society will be pleased to welcome all new members and visitors. The results of the table shows, for the highest points of the year was won by N. Emerson who was presented with the Club Trophy, E. Calow was second, and P. Smith third. In the Junior Section, Master J. Ormes was awarded the first, with C. Emerson second and Miss C. Eaves third.

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THERE were 498 entries at the **St. Helens A.S.** first open show and the results were: Best Fish in Show:—Hastatus Cat: B. W. Carter (ST. HEL); Guppies: 1, E. Seymour (MER); 2, M. Flatley (MER); 3, A. Darby (Hyde). Platies: 1, Mr. and Mrs. Muckle (STH-PT); 2, A. Darby (Hyde); 3, P. H. Batchelor (LYN). Swords: 1, B. Carter (ST. HEL); 2, Mrs. Stillwell (SND-GRS); 3, C. Everson (SND-GRS). Mollies: 1, B. Carter (ST. HEL); 2, E. Seymour (MER); 3, R. Barkley (MER). A.O.V. Livebearer: 1, Mrs. K. McBride (AIR); 2, Mrs. Stillwell (SND-GRS); 3, S. Cuff (AIR). Small Anabantids: 1, B. Wilson (MER); 2, F. Mulla (MER); 3, E. Seymour (MER). Large Anabantids: 1, D. Algie (ST. HEL); 2, Mrs. Stillwell (SND-GRS); 3, M. Reily (WYT). Fighters: 1 and 2, R. Faux (MER); 3, S. Cuff (AIR). Small Barbs: 1, M. Hay (OLD); 2, B. Carter (ST. HEL); 3, Mr. and Mrs. Muckle (STH-PT). Large Barbs: 1, Mr. and Mrs. Davies (DUN); 2 and 3, A. Vassiere (MER). Dwarf Cichlids: 1 and 2, T. Hampton (MER); 3, B. Wilson (MER). Large Cichlids: 1, D. Wilson (MER); 2, G. Robinson (HOY); 3, J. A. Croughton (WYT). Rift Valley Cichlids: 1 and 2, Mrs. Stillwell (SND-GRS); 3, B. Wilson (MER). Angels: 1, M. Reilly (WYT); 2, P. H. Batchelor (LYN); 3, Mr. and Mrs. Muckle (STH-PT). Small Characins: 1 and 2, R. J. Stephens (BLKN); 3, K. Thompson (MER). Large Characins: 1, Mrs. S. Seymour (MER); 2, Mr. and Mrs. Muckle (STH-PT); 3, G. Waterhouse (SND-GRS). Toothcarps: 1, K. Kryger (WRXM); 2, J. Glover (BKA); 3, R. Barkley (MAS). Danios: 1, R. J. Stephens (BLKN); 2, J. Smith (MER); 3, M. Hay (OLD). Minnows: 1, R. J. Stephens (BLKN); 2, M. Hay (OLD); 3, Mr. and Mrs. Baldwin (SND-GRS). Rasboras: 1, Mr. and Mrs. Muckle (STH-PT); 2, F. and M. Howarth (MCM-BAY); 3, H. L. Flatley (MER). Corydoras and Brochis: 1 and 3, B. W. Carter (ST. HEL); 2, I. Hopkins (MER). A.O.V. Catfish: 1, Mr. and Mrs. Baldwin (SND-GRS); 2, T. Hampton (MER); 3, P. H. Batchelor (LYN). Sharks: 1, Mr. and Mrs. Baldwin (SND-GRS); 2, B. Dawson (HEY); 3, T. Hampton (MER). Foxes: 1, T. Hampton (MER); 2, Mr. and Mrs. Davies (DUN); 3, T. Redfern (HEY). Loaches: 1, Mr. and Mrs. Muckle (STH-PT); 2, Mr. and Mrs. Ham (LYT); 3, I. Hopkins (MER). A.O.V.: 1 and 3, P. H. Batchelor (LYN); 2, Mr. and Mrs. Baldwin (SND-GRS). Pairs Egglayers (Under 3 in.): 1, R. J. Stephens (BLKN); 2, Mr. and Mrs. Muckle (STH-PT); 3, B. Wilson (MER). Pairs Egglayers (Over 3 in.): 1, A. Vassiere (MER); 2, K. Thompson (MER); 3, Mr. and Mrs. Darracott (MER). Pairs (Livebearers): 1 and 2, K. Thompson (MER); 3, T. Hampton (MER). Breeders (Livebearers): 1, A. J. Manser (SND-GRS); 2, Mr. and Mrs. Davies (DUN); 3, I. Hopkins (MER). Breeders Egglayers (Easy): 1, J. Wood (AIR); 2, R. I. Payne (MER); 3, S. Finch (HOY). Breeders Egglayers (Hard): 1 and 3, A. Vassiere (MER); 2, K. Kryser (WRXM). CMN Goldfish: 1, E. Seymour (MER); 2 and 3, Mr. Whitsey (ACC). Fancy Goldfish: 1 and 3, Mr. Whitsey (ACC); 2, Mrs. A. Dawson (HEY). A.O.V. Coldwater: 1, E. Seymour (MER); 2 and 3, Mr. Whitsey (ACC). Marine A.O.V.: 1 and 2, Mr. and Mrs. Davies (DUN). Ladies: 1 and 3, Mrs. Muckle (STH-PT); 2, S. Bland (LYN). Junior (Egglayers): 1, I. Hopkins (MER); 2, D. Traynor (ST. HEL); 3, S. Finch (HOY). Junior (Livebearers): 1, Miss S. McBride (AIR); 2, I. Hopkins (MER); 3, J. Cayre (ASH). Mini-Jars: 1, Mr. and Mrs. Agar (AIR); 2, K. Smith (MIDD); 3, Mrs. S. Seymour (MER).

The societies mentioned with their abbreviations were: (AIR) Airborough, (MER) Merseyside, (OLD) Oldham, (LYN) Loyne, (LYT) Lytham, (STH-PT) Southport, (SND-GRS) Sandgrounders, (WYT) Wythenshawe, (HOY) Hoylake, (ACC) Accrington, (DUN) Dunlop, (ASH) Ashton, (MIDD) Middleton, (HEY) Heywood, (BLKN) Blackburn, (ST. HEL) St. Helens, (McM-BAY) Morecambe Bay, (WRXM) Wrexham, (BKA) British Killifish Association.

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THE result of the August table show of the **Merthyr A.S.** was as follows:—Characins 1, D. Marsh; 2, M. Morgan; 3, C. Morgan; 4, M. Davies. Swordtails: 1 and 4, B. Bow; 2, R. Burton; 3, J. Clifford.

While the judging was in progress a very interesting slide show and quiz was given by Mr. G. V. Blackburn, show secretary of the society.

THE SAFE CURE FOR FUNGUS IS halamid
Hillside Aquatics London N12

ENTRIES for the **Bridgewater A.S.** first Open Show in September totalled 522. Results: Guppies: 1, D. Ridyard (Leigh); 2 and 3, Mr. E. Seymour (Merseyside). Platies: 1, Mr. and Mrs. Houghton (Southport); 2, A. Saunders (Middleton); 3, Mr. and Mrs. Muckle (Southport). Swordtails: 1, D. Carr (Wythenshawe); 2, T. Faux (Merseyside); 3, Mr. and Mrs. Houghton (Southport). Mollies: 1, Mrs. Hall (Aireborough); 2, E. Seymour (Merseyside); 3, A. P. Squirrell (Wythenshawe). A.O.V. Livebearers: 1, Mr. and Mrs. Newton (Blackburn); 2, A. Whittaker (Macclesfield); 3, T. and J. Selby (Wythenshawe). Small Characins: 1, T. and J. Selby (Wythenshawe); 2 and 3, Mr. and Mrs. Houghton (Southport). Large Characins: 1 and 3: Mr. Barlow (Leigh); 2, Mr. and Mrs. Baldwin (Sandgrounders). Small Barbs: 1, Mr. and Mrs. Muckle (Southport); 2, H. Molyenaux (Leigh); 3, P. H. Batchelor (Loyne). Large Barbs: 1, A. Oldham (Wythenshawe); 2, Mr and Mrs. A. Davies (Dunlop); 3, M. Hay (Oldham). Small Anabantids: 1, Mr. and Mrs. Muckle (Southport); 2, Mr. and Mrs. Newton (Blackburn); 3, B. Coyne (Ashton in Macclesfield). Large Anabantids: 1, Mr. and Mrs. Newton (Blackburn); 2, Mr. and Mrs. Muckle (Southport); 3, A. Saunders (Middleton). Fighters: 1 and 3, B. Faux (Merseyside); 2, Master L. Cuff (Aireborough). Small Cichlids: 1, Mr. and Mrs. Agar (Aireborough); 2, M. and N. Rimmer (Sandgrounders); 3, Master L. Cuff (Aireborough). Large Cichlids: 1, J. Ridley (Heywood); 2 and 3 Mr. and Mrs. Newton (Blackburn). Angels: 1, Mr. and Mrs. Muckle (Southpoet); 2, K. Wright (Sandgrounders); 3, M. Riley (Wythenshawe). Rift Valley Cichlids: 1, D. Hilton (Bridgewater); 2, B. Faux (Merseyside); 3, D. Mason (Bridgewater). Toothcarps: 1, A. Hardcastle (Aireborough); 2, M. Burgoyne (Bridgewater); 3, Mr. and Mrs. Tasker (Sandgrounders). Minnows: 1 and 2, Mr. and Mrs. Houghton (Southport); 3, M. Hay (Oldham). Danios: 1, M. Hay (Oldham); 2, A. P. Squirrell (Wythenshawe); 3, Mr. and Mrs. Campbell (Macclesfield). Rasboras: 1 and 2, H. Flatley (Merseyside); 3, D. Wilson (Merseyside). Corydoras: 1, Mr. and Mrs. Muckle (Southport); 2, D. Ridyard (Leigh); 3, T. and J. Selby (Wythenshawe). A.O.V. Catfish: 1, Mr. and Mrs. Gough (Wynnstay); 2, Mrs. J. Freer (Partington); 3, Mr. and Mrs. Newton (Blackburn). Loaches: 1, Mr. Barlow (Leigh); 2 and 3, Mr. and Mrs. Muckle (Southport). Sharks: 1, Mr. and Mrs. Bald (Sandgrounders); 2, Mr. and Mrs. Gough (Wynnstay); 3, K. Buckley (Bridgewater). Flying Foxes: 1, D. Rowe (Bridgewater); 2 and 3, T. and J. Selby (Wythenshawe). True Pairs Livebearers: 1, Mr. and Mrs. Baldwin (Sandgrounders); 2, Mr. and Mrs. Agar (Aireborough); 3, Mr. and Mrs. Campbell (Macclesfield). True Pairs Egglayers: 1, Mr. and Mrs. Muckle (Southport); 2, Mr. and Mrs. Newton (Blackburn); 3, Mr. and Mrs. Houghton (Southport). Breeders Egglayers (Hard): 1, D. Mason (Bridgewater); 2, Mr. and Mrs. Agar (Aireboeough); 3, H. Flatley (Merseyside). Breeders Egglayers (Easy): 1, H. Molyenaux (Leigh); 2, J. Ridley (Heywood); 3, Mr. and Mrs. A. Davies (Dunlop). Breeders Livebearers: 1, D. Ridyard (Leigh); 2 and 3, G. Evason (Sandgrounders). A.O.V. Tropicals: 1, Mr. and Mrs. Newton (Blackburn); 2, J. Brown (Sandgrounders); 3, Mr. and Mrs. Baldwin (Sandgrounders). Juniors Livebearers: 1, Galow (Bolton Gunners); 2, A. P. Squirrell (Wythenshawe); 3, Master M. Rimmer (Sandgrounders). Juniors Egglayers: 1, Miss Baldwin (Sandgrounders); 2, Master M. Burgoyne (Bridgewater); 3, Master J. Harvey (Sandgrounders). Ladies' A.O.V.: 1 and 3, Mrs. S. Lloyd (Wynnstay); 2, Mrs. Gough (Wynnstay). Goldfish (Single-tail): 1, E. Seymour (Merseyside); 2, R. Dingley (Heywood); 3, Mr. and Mrs. Wolstenholme (Blackburn). Goldfish (Double-tail): 1, R. Dingley (Heywood); 2 and 3, Mr. and Mrs. Wolstenholme (Blackburn). A.O.V. Coldwater: 1, Mr. and Mrs. Wolstenholme (Blackburn); 2 and 3, Mr. and Mrs. Newton (Blackburn). Koi Carp: 1, Mr. and Mrs. Wolstenholme (Blackburn). Marine Tropical: 1, P. Squirrell (Wythenshawe). Best in Show A.O.V. Coldwater, Mr. and Mrs. Wolstenholme (Blackburn).

WINNERS at the **Macclesfield A.S.** Open Show were as follows: Guppies: 1, A. Whittaker (Macclesfield); 2, B. W. Carter (St. Helens); 3, Mr. and Mrs. Campbell (Macclesfield). Platies: 1 and 3, Mr. and Mrs. Houghton (Southport); 2, Mr. and Mrs. Baldwin (Sandgrounders). Swordtails: 1, D. Carr (Wythenshawe); 2, P. and A. Squirrell (Wythenshawe); 3, Mr. and Mrs. Houghton (Southport). Mollies: 1, P. and A. Squirrell, (Wythenshawe); 2, Mr. and Mrs. Tinsley (Sandgrounders); 3, Mr. and Mrs. Campbell (Macclesfield). A.O.V. Livebearers: 1, Mr. and Mrs. Tasker (Sandgrounders); 2, Mr. and Mrs. Newton (Blackburn); 3, A. Whittaker (Macclesfield). Small Anabantids: 1, Mr. and Mrs. Muckle (Southport); 2, N. and M. Rimmer (Sandgrounders); 3, Mr. and Mrs. Baldwin (Sandgrounders). Large Anabantids: 1 and 2, D. Algie (St. Helens); 3, P. Tomlinson (Macclesfield). Fighters: 1, Mr. and Mrs. Tomlinson (Macclesfield); 2, H. Buckley, (Northwich); 3, Mr. and Mrs. Baldwin (Sandgrounders). Small Cichlids: 1, N. and M. Rimmer (Sandgrounders); 2, S. Goddard (Macclesfield); 3, S. Brewis (Bridgewater). Large Cichlids: 1, Mr. and Mrs. Taylor (Merseyside); 2, A. Whittaker (Macclesfield); 3, S. Small (Macclesfield). Angels: 1 and 3, Mr. and Mrs. Muckle (Southport); 2, M. Riley (Wythenshawe). Rift Valley: 1, G. Snillwell (Sandgrounders); 2, Mrs. Mayfido (Buxton); 3, Mrs. Gough (Wynnstay). Small Barbs: 1, Mr. and Mrs. Houghton (Southport); 2 and 3, Mr. and Mrs. Muckle (Southport). Large Barbs: 1, Mr. and Mrs. Goddard (Macclesfield); 2, S. Small (Macclesfield); 3, A. Oldham (Wythenshawe). Small Characins: 1, Mr. and Mrs. Houghton (Southport); 2 and 3, N. and M. Rimmer (Sandgrounders). Large Characins: 1, Mr. and Mrs. Houghton (Southport); 2, Mr. and Mrs. Baldwin (Sandgrounders); 3, P. Unsworth (Macclesfield). Toothcarps: 1, T. Buckley (Northwich); 2, Mrs. January (Wednesbury); 3, Mr. and Mrs. Taylor (Merseyside). Minnows: 1, Mr. and Mrs. Houghton (Southport); 2, Mr. and Mrs. Muckle (Southport); 3, J. Bale (Sandgrounders). Danios: 1, A. Bolan (Wythenshawe); 2, Mr. and Mrs. Baldwin (Sandgrounders); 3, J. and G. Waterhouse (Sandgrounders). Rasboras: 1, S. Goddard (Macclesfield); 2, Mr. and Mrs. Houghton (Southport); 3, Mr. and Mrs. Muckle (Southport). Corydoras and Brochis: 1, B. W. Carter (St. Helens); 2 and 3, Mr. and Mrs. Taylor (Merseyside). A.O.V. Catfish: 1, Mr. and Mrs. Houghton (Southport); 2, Mr. and Mrs. Gough (Wynnstay); 3, Mr. and Mrs. Baldwin (Sandgrounders). Loaches: 1 and 3, Mr. and Mrs. Muckle (Southport); 2, N. and M. Rimmer (Sandgrounders). Sharks: 1, Mr. and Mrs. Baldwin (Sandgrounders); 2, J. Buckley (Northwich); 3, P. Stratwell (Buxton). Flying Foxes: 1, E. Hampson (Wythenshawe); 2, K. Wright (Sandgrounders); 3, P. Unsworth (Macclesfield). Breeders Egglayers (Hard 11 to 20): 1 and 3, Mr. and Mrs. Bradshaw (Sheaf Valley); 2, Mrs. Buckcliff (Wednesbury). Breeders Egglayers (Easy 1 to 10): 1 and 2, Mr. and Mrs. Bradshaw (Sheaf Valley); 3, J. Alkin (Buxton). Breeders (Livebearers): 1, K. Terry (Wednesbury); 2 and 3, Mr. Franson (Sandgrounders). True Pairs (Egglayers): 1, B. W. Carter (St. Helens); 2, Mr. and Mrs. Muckle (Southport); 3, S. Goddard (Macclesfield). True Pairs (Livebearers): 1, Mr. and Mrs. Newton (Blackburn); 2, E. Hampson (Wythenshawe); 3, Mr. and Mrs. Taylor (Merseyside). A.O.V. (any variety not listed): 1, Mr. and Mrs. Baldwin (Sandgrounders); 2, Mr. and Mrs. Newton (Southport); 3, Mr. and Mrs. Bradshaw (Sheaf Valley). Juniors (Egglayers): 1, D. Carr (Wythenshawe); 2, P. and S. Taylor (Merseyside); 3, A. Whittaker (Macclesfield). Juniors (Livebearers): 1, D. Houghton (Southport); 2, J. Watkins (Darlaston); 3, A. Whittaker (Macclesfield). Common Goldfish: 1, 2 and 3: Mr. and Mrs. Wolstenholm (Blackburn). Fancy Goldfish: 1 and 2, Mr. and Mrs. Wolstenholm (Blackburn); 3, H. Buckley (Northwich). A.O.V. Coldwater: 1 and 2, Mr. and Mrs. Newton (Blackburn); 3, Mr. and Mrs. Wolstenholm (Blackburn). Ladies (any variety): 1, Mrs. Baldwin (Sandgrounders); 2, Mrs. Lloyd (Wynnstay); 3, Miss L. Oldham (Wythenshawe). Mini Jars: 1, 2 and 3, E. Jones (Wrexham). Best in Show: Mr. and Mrs. Taylor (Merseyside A.S.) with a Red Devil.

THE annual general meeting of the **Gloucester A.S.** was held early in September when the following members were elected to serve on the committee for the next year: Chairman: Mr. L. Griffiths; Vice-Chairman: Mr. C. Freshney; Secretary: Mr. D. Parry, 49 Oxstalls Way, Longlevens, Gloucester; Committee: Messrs. P. Cole, N. Washbourne, M. Freshney and B. Wattam. Society meetings are held at Chequers Beidge Leisure Centre, Glos., on the first Tuesday of every month, starting at 8.00 p.m.

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FORTY entries were judged at the September Bench Show of the **King's Lynn A.S.** by the club's president, Mr. R. Haverson. The results were as follow:—1, B. Fowler; 2, C. Preston; 3, C. Simper; 4, D. Taylor; Special, C. Simper. A fish auction and raffle were also held to raise money for club funds and members had a very enjoyable evening.

In future a small bench show of just one class is to be included in each month's meeting. Anyone who would like to come along at 8.00 p.m., on the second Thursday each month at the Victoria P. House, Loke Road, Lynn would be very welcome.

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The Results of the **Castleford A.S.** Open Show held in August were as follow:—Guppies (Male): 1, Mr. and Mrs. Richmond (Retford); 2, W. Hunt (Thorne); 3, Mrs. R. Newsorthy (North Humberside). Guppies (Females): 1, Mr. and Mrs. Newson (South Humberside); 2, T. Busfield (Barnsley); 3, Master A. Young (Hull). Swordtails: 1, N. Andrews (Hull); 2, Mr. and Mrs. Roberts (Doncaster); 3, P. Smith (Scunthorpe and District). Mollies: 1, Mr. and Mrs. K. Petty (Castleford); 2, R. Nesworthy (Northumbrian); 3, Mrs. G. Frisby (Hull). Platies: 1, T. Busfield (Barnsley); 2, Mr. and Mrs. K. Petty (Castleford); 3, G. Andrews (Hull). A.O.V. Livebearer: 1, B. Sleight (Mexboro); 2, G. Flinton (Scarboro); 3, Mrs. Abbott (Aireboro). Small Characins: 1, Binns and Cadlow (Scunthorpe Museum); 2, J. Cartwright (Huddersfield) 3, Mr B Sleight (Mexboro). Large Characins: 1, Mr. and Mrs. Daines (Doncaster); 2, H. Thorpe (Doncaster); 3, T. Hope (Hartlepool). Rasboras: 1, Master S. White (Retford); 2, B. Jackson (Doncaster); 3, Mr. and Mrs. Tyson (South Humberside). Danios and Minnows: 1, Mr. and Mrs. Tyson (South Humberside); 2, Master S. White (Retford); 3, I. Duncan (Hull). Barbs (Small): 1, Mr. Abbott (Aireboro); 2, M. Price (Castleford); 3, Mr. and Mrs. Holmes (Castleford). Barbs (Large): 1, K. Lancashire (Doncaster); 2, A. Cooks (Retford); 3, Mr. and Mrs. Cohen (Doncaster). Dwarf Cichlids: 1, Binns and Cadlow (Scunthorpe Museum); 2, Mr. and Mrs. Tyson (South Humberside); 3, Mr. and Mrs. Stella (Retford). Cichlids (Large): 1, Mr. and Mrs. Vernon (Retford); 2, M. Moreland (Half Moon); 3, K. Noble (Redcar). Angels: 1, R. Nesworthy (Northumbrian); 2, Mr. and Mrs. Richmond (Retford); 3, G. Andrews (Hull). Lake Malawi Cichlids: 1 and 3, G. Collier (Goole); 2, S. Wolstenholme (Heywood). Fighters: 1, Mr. and Mrs. J. Riley (Castleford); 2, S. Banks (Mexboro); 3, S. Birdsall (Swillington). Anabantids (Small): 1, P. Birdsall (Swillington); 2, Mr. and Mrs. Holmes (Castleford); 3, Mr. and Mrs. Tyson (South Humberside). Anabantids (Large): 1, J. Banks (Mexboro); 2, Mr. Feasey (Doncaster); 3, G. Flinton (Scarboro). Toothcarps: 1, B. Sleight (Mexboro); 2, Master A. Young (Hull); 3, A. Waddington (Barnsley). Loaches: 1, A. Clark (Castleford); 2, Mr. and Mrs. Moore, (Sheaf Valley); 3, T. Sanderson (Thorne). Botias: 1 Binns and Caldow (Scunthorpe Museum); 2, G. Allen (South Humberside); 3, Master J. Emmerson (Castleford). Sharks and Foxes: 1, Mr. and Mrs.

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Beaumont (Independent); 2, D. Sugden (Bradford); 3, T. Sanderson (Thorne). Corydoras: 1 and 3, C. Carrick (Castleford); 2, L. Price (Castleford). A.O.V. Cat: 1, Mr. and Mrs. Holmes (Castleford); 2, Mr. and Mrs. W. Emmerson; 3, T. Sanderson (Thorne). Egglayers (Pairs): 1, Master S. White (Retford); 2, R. Newcorthy (Northumbrian); 3, Mr. and Mrs. Holmes (Castleford). Livebearers (Pairs): 1, D. Sugden (Bradford); 2, Mr. Abbott (Aireboro); 3, B. Jackson (Doncaster). A.O.V. Tropical: 1, T. Busfield (Barnsley); 2, Mr. and Mrs. F. Holmes (Castleford); 3, A. Frisby (Hull). Egglayers (Juniors): 1, Master S. Green (Castleford); 2, Master S. White (Retford); 3, Master A. Young (Hull). Livebearers (Juniors): 1, Master A. Young (Hull); 2, Master S. White Retford); 3, Master J. Emmerson (Castleford). Novice Egglayers: 1, Mrs. Cayill (Doncaster); 2, G. Cox (Swillington); 3, Mrs. Hodgson (Independent). Novice Livebearer: 1, Mrs. Hodgson (Independent); 2, Mrs. Carrick (Castleford); 3, A. Smith (Aireboro). Breeders Livebearers (1-10): 1, B. Jackson (Doncaster); 2, A. Waddington (Barnsley); 3, D. P. Birdsall Swillington). Breeders Livebearers (11-20): 1, B. Jackson (Doncaster); 2, T. Busfield (Barnsley); 3, Mr. Abbott (Aireboro). Breeders Egglayers (1-10): 1, B. Jackson (Doncaster); 2, P. Smith (Aireboro); 3, N. Blenkin (Bridlington). Breeders Egglayers (11-20): 1, Miss J. Cayhill (Doncaster); 2, S. P. Royle-Eyatt (Aireboro); 3, B. Jackson (Doncaster). Shubunkins and Fancy Coldwater: 1, Mr. and Mrs. J. Riley (Castleford); 2, Mr. Wood (Aireboro); 3, Mrs. Asquith (Castleford). Common Coldwater: 1, Mr. and Mrs. Steels (Retford); 2, D. Fisher (Bradford); 3, Mrs. Asquith (Castleford). A.O.V. Coldwater: 1 and 3, K. M. Wood (York); 2, S. Banks (Mexboro). Novelty Jars: 1 and 2, K. Lancashire (Doncaster); 3, Master J. Emmerson (Castleford). The Best Fish in Show award was won by Mr. and Mrs. Vernon from Retford, Best Exhibitor was B. Jackson, Doncaster A.S. with 13 points, second being Master S. White, Retford, 12 points and third, was Mr. and Mrs. Holmes, Castleford, 11 points. The Society with the most points was Castleford A.S., 43 points, second, Doncaster A.S., 35 points and third, Retford A.S., 23 points. There were 631 entries.

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OVER 550 guppies ranging from the more common Deltas to specialist fish such as Pintails and Cofertails were on show at the **Fancy Guppy Association** National Show held in Birmingham recently. During the afternoon members were well entertained by Dr. David Ford's (Aquarian Foods) illustrated slide show of world aquaria.

The major awards of the day were as follow:— The Calgary Trophy for the F.G.A. Section gaining the highest points to South London Section. Winner of the F.G.A. British Open Guppy Championship was K. Lee of Edmonton and he also won Best Female, Best in Show and Best Breeders awards. Best Male went to R. Early of South London. Class Winners:— Male Guppies: Delta: K. Lee. Long Dorsal Veil: F. Joyce. Short Dorsal Veil: R. Early. Fantail: Mr. and Mrs. Brock. Topsword: W. and R. Myers. Bottomsword: W. and R. Myers. Doublesword: B. Reynolds. Colour Male: R. Clarke. Original Veil: Mrs. J. Croft. Pintail: Mrs. J. Croft. Cofer: P. Jinks. Dove: Mrs. J. Croft. Scarftail: K. Lee. Roundtail: B. Reynolds. Speartail: W. & R. Myers. Lyretail: K. Lee. Female Guppies: Superba: Mr. and Mrs. Brock. Wedgetail: J. Hutchings. Natural: W. and R. Myers. Scallop: D. Smith. Cofer: K. Lee. Metropolitan: R. Early. Roundtail: R. Clarke. Colour Female: R. Early. Breeders Classes: Breeders Males: R. Escott. Breeders Females: J. Hutchings. Breeders Pairs: B. Reynolds. Master Breeders: K. Lee. Adv. Master Breeders: K. Lee. Grade One Males: D. Curry. Grade One Females: K. Lee. Grade Two: K. Lee. Junior Male: Miss L. Curry. Junior Female: Miss L. Curry. Ladies' Male: Mrs. Reynolds. Ladies' Female: Mrs. Reynolds.

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THE **Rhondda A.S.** was busy during the last two weeks of August, and the start of September. Fresh from their win in the friendly Inter-Club match at Port Talbot they went to Merthyr A.S. to meet in a three-corner friendly with Merthyr and Aberdare, but on this occasion were beaten by both their opponents. In September they met for their "Best Fish in Club" competition. M. Findicott of the British Killifish Association was the Speaker invited along for the evening and the C.N.A.A. Class "C" judges from Merthyr, Marilyn Davies and P. Willis came along to judge the exhibits. Results:— Best Egglayer: 1 and 4, P. and Y. Watts; 2, M. Thomas; 3, A. and M. Smith. Best Livebearer: 1 and 3, B. Ashcroft; 2 and 4, A. and M. Smith.

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OPEN Show results from the **Oldham and District A.S.** were:— Guppies: 1, Poulton Bros. (Southport); 2, Mr. Parr (Hyde); 3, Mr. Campbell (Macclesfield). Mollies: 1, Poulton Bros. (Southport); 2, Mr. and Mrs. Tinsley (Sandgrounders); 3, P. and A. Squirrell (Wythenshawe). Swordtails: 1, T. Fagg (Merseyside); 2, T. Redfern (Heywood); 3, D. Carr (Wythenshawe). Platies: 1, Mr. and Mrs. Houghton (Southport); 2, Mr. and Mrs. Baldwin (Sandgrounders); 3, Mr. and Mrs. Muckle (Southport). A.O.V. Livebearers: 1, Mr. and Mrs. Houghton (Southport); 2, A. Saunders (Middleton); 3, Mr. and Mrs. McConnbe (Blackburn). Anabantids: 1, Mr. and Mrs. Newton (Blackburn); 2, Mr. and Mrs. G. Brown (Castleford); 3, A. McDonald (Oldham). Fighters: 1, Mr. and Mrs. Tomlinson (Macclesfield); 2, Mr. and Mrs. Baldwin (Sandgrounders); 3, N. Holmes (Oldham). Small Barbs: 1, Mr. and Mrs. G. Brown (Castleford); 2, Mr. and Mrs. Muckle (Southport); 3, C. Yates (Southport). Large Barbs: 1, Mr. and Mrs. Goddard (Macclesfield); 2, M. Hay (Oldham); 3, Mr. and Mrs. Houghton (Southport). Dwarf Cichlids: 1, Mr. Coyne (Ashton-in-Makerfield); 2, P. Eccles (Oldham); 3, A. Bolan (Wythenshawe). Large Cichlids: 1, Mr. and Mr. J. Taylor (Merseyside); 2, Mr. and Mrs. Newton (Blackburn); 3, J. and J. Ashton (Heywood). Angels: 1 and 3, Mr. and Mrs. Muckle (Southport; 2, D. Pearson (Hyde). Rift Valley Cichlids: 1 and 2, S. Wolstenholme (Heywood); 3, P. and S. Taylor (Merseyside). Small Characins: 1, Mr. and Mrs. G. Brown (Castleford); 2, Mr. and Mrs. Muckle (Southport); 3, Mr. and Mrs Houghton (Southport). Large Characins: 1, G. Bend (Southport); 2, Mr. and Mrs. Baldwin (Sandgrounders); 3, E. Calow (Bolton Gunner). Rasboras: 1, Mr. and Mrs. Muckle (Southport); 2, Mr. and Mrs. Houghton (Southport); 3, T. Fish (Heywood). Danios and Minnows: 1, Mr. and Mrs. Campbell (Macclesfield); 2, M. Hay (Oldham); 3, Mr. and Mrs. Houghton (Southport). Sharks: 1, Mr. and Mrs. Baldwin (Sandgrounders); 2, B. Dawson (Heywood); 3, J. McCormack (Hoylake). Flying Foxes: 1, B. Dawson (Heywood); 2, T. Redfern (Heywood); 3, T. and J. Selby (Wythenshawe). Toothcarps: 1, Mr. and Mrs. Taylor (Merseyside); 2, B. Dawson (Heywood); 3, Mr. and Mrs. Burgoyne (Bridgewater). Corydoras: 1, Mr. and Mrs. Muckle (Southport); 2, Mr. and Mrs. Harvey (Sandgrounders); 3, Mr. and Mrs. Houghton (Southport). A.O.V. Catfish: 1, Mr. and Mrs. Gough (Wynnstay); 2, Mr. and Mrs. Baldwin (Sandgrounders); 3, Mr. and Mrs. Newton (Blackburn). Loaches and Botias: 1 and 2, Mr. and Mrs. Muckle (Southport); 3, S. Wolstenholme (Heywood). Breeders Egglayers (1-10): 1, S. Foot (Accrington); 2, J. Ridley (Heywood). 3, Mr. Emerson (Bolton Gunners). Breeders Egglayers (11-20): 1, Poulton Bros. (Southport). Breeders Livebearers: 1 and 2, Poulton Bros. (Southport); 3, A. Saunders (Middleton). Pairs Egglayers: 1, Mr. and Mrs. Muckle (Southport); 2, Miss A. Gregory (East Lancs.); 3, Mr. and Mrs. Rogers (Southport). Pairs Livebearers: 1, Mr. and Mrs. Baldwin (Sandgrounders); 2, G. Bond (Southport); 3, Poulton Bros. (Southport). A.O.V. Tropical: 1, Mr. and Mrs. Baldwin (Sandgrounders); 2, P. and H. Batchelor (Loyne); 3, P. Walsh (Blackburn). Mini Jars— Furnished: 1 and 2 E. Jones (Wrexham); 3, E. Birchwood (Oldham). Plant Rooted: 1 and 2, A. Chadwick (Oldham). Common Goldfish and Comets: 1 and 2, Mr. and Mrs. Wolstenholme (Blackburn); 3, C. H. Whitsey (Accrington). Shubunkins: 1 and 3, S. Foot (Accrington); 2, Mr. and Mrs. Wolstenholme (Blackburn). Fantails: 1 and 2, S. Walsh (Accrington); 3, Mr. and Mrs. Wolstenholme (Blackburn). Veiltails: 1, S. Foot (Accrington); 2, Mr. and Mrs. Wolstenholme (Blackburn). Lionheads: 1, C. H. Whitsey (Accrington). Moors: 1 and 2, S. Foot (Accrington); 3, S. Walsh (Accrington). Orandas: 1, S. Walsh (Accrington); 2, P. and A. Squirrell (Wythenshawe). A.O.V. Coldwater: 1, Mr. and Mrs. Newton (Blackburn); 2, J. Ridley (Heywood); 3, Mr. and Mrs. Wolstenholme (Blackburn). Best Fish in Show: Mr. and Mrs. J. Taylor (Merseyside)—Cichlasoma Citrinellum.

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RESULTS of the **Yorkshire Aquarists Festival** were:—Society Furnished Freshwater Aquarium: 1, Retford; 2, Sheaf Valley; 3, Scarborough. Individual Furnished Freshwater Aquarium: Mr. and Mrs. Roberts (Doncaster); 2, Mrs. P. Young (Chesterfield) Individual Coldwater Furnished Aquarium: 1, Mrs. Agar and Mrs. McBride (Aireborough); 2, T. Reid (Worksop). Individual Marine Aquarium: 1, B. Banks (Thorne). Aquascape: Mr. and Mrs. E. Smith (Sheffield); 2, Mr. and Mrs. J. Dick (Sheaf Valley). Novelty: 1 Mr. K. Lancashire (Doncaster; 2, B. Banks (Thorne). 3, Miss A. Ramsey (Castleford). Guppies: 1, Mrs. Ipakchi (Sheaf Valley); 2, Mr. and Mrs. E. Stanton (Sheffield); 3, A. Darby (Hyde). Platies: 1, Mr. and Mrs. E. Stanton (Sheffield); 2, Master S. Green (Castleford); 3, R. A. Johnson (Hyde). Mollies: 1, Mr. and Mrs. Holmes (Castleford); 2, Miss S. McBride (Aireborough); 3, T. Tinsley (Rotherham). Swordtails: 1, Mr. and Mrs. Blades (Bassetlaw); 2, Mr. and Mrs. B. Moore (Sheaf Valley); 3, Mr. and Mrs. B. Roberts (Doncaster). A.O.V. Livebearer: 1, Mr. and Mrs. B. Moore (Sheaf Valley); 2, Mrs. K. McBride (Aireborough); 3, Mr. and Mrs. Chester (Retford). Small Barbs: 1, Mr. and Mrs. Blades (Bassetlaw); 2, Mr. and Mrs. Emmerson (Castleford); 3, L. Fletcher (Doncaster). Large Barbs: 1, Mr. and Mrs. Holmes (Castleford); 2, P. Shirley (Goole); 3, A. Cook (Retford). Small Characins: 1, Mr. and Mrs. Holmes (Castleford); 2, P. Shirley (Goole); 3, A. Cook (Retford). Small Characins: 1, Mr. and Mrs. B. Roberts (Doncaster); 2, H. Ackroyd (Doncaster); 3, Mr. and Mrs. Richardson (Scarborough). Large Characins: 1, P. Baston (Dearne); 2, T. Tinsley (Rotherham); 3, Miss A. McBride (Aireborough). Rasboras: 1, Mr. and Mrs. E. Stanton (Sheffield); 2, A. Clayton (Immingham); 3, K. Chapman (Mexborough). Danios: 1, J. Banks (Mexborough); 2, A. Clayton (Immingham); 3, B. Parr (Hyde). Minnows: 1, Mr. and Mrs. Blades (Bassetlaw); 2, B. Young (Chesterfield); 3, Mr. and Mrs. Clarke (Bassetlaw). Egglaying Toothcarps (Top and Switch Spawners): 1, B. Sleight (Mexborough); 2, Mr. and Mrs. Blades (Bassetlaw); 3, Mr. and Mrs. B. Sidebottom (Sheffield). Egglaying Toothcarps (Bottom Spawners): 1 and 2, Mr. and Mrs. Blades (Bassetlaw); 3, D. Greenwood (Immingham). True Stained Siamese Fighters: 1, Mr. and Mrs. Mangles (Retford); 2, Mr. and Mrs. Riley (Castleford); 3, Mr. and Mrs. Clarke (Bassetlaw). Multi-coloured Siamese Fighters: 1, Mr. and Mrs. Wooley (Bassetlaw); 2, A. Scarll (Goole); 3, T. Reid (Worksop). Small Anabantids: 1, Mr. and Mrs. Blades (Bassetlaw); 2, Mr. and Mrs. B. Roberts (Doncaster); 3, Mr. and Mrs. Riley (Castleford). Large Anabantids: 1, Master S. Green (Castleford); 2, J. Banks (Mexborough); 3, A. Feasey (Doncaster). Dwarf Cichlids: 1, Mr. and Mrs. Morrissey (Immingham); 2, R. Howell (Doncaster); 3, Mr. and Mrs. K. Agar (Aireborough). Rift Valley Cichlids: 1, G. Collier (Goole); 2 and 3, M. Wainwright (Worksop). Angels: 1, Mr. and Mrs. C. Lancaster (Retford); 2, Mr. and Mrs. Richmond (Retford); 3, Mr. and Mrs. Hooley (Bassetlaw). A.O.V. Cichlids: 1, Mr. and Mrs. Vernon (Retford); 2, R. Howell (Doncaster); 3, Mrs. K. McBride (Aireborough). Corydoras: 1, Mr. and Mrs. Riley (Castlefoed); 2, Pete and Sylvia (Bridlington); 3, W. Blundell (Doncaster). A.O.V. Catfish: 1, T. Sanderson (Thorne); 2, Mr. and Mrs. Emmerson (Castleford); 3, W. Blundell (Doncaster). Botias and Loaches: 1, Mr. and Mrs. B. Moore (Sheaf Valley); 2, T. Sanderson (Thorne); 3, J. Emmerson (Castleford). Sharks: 1, M. Woods (Thorne); 2, E. Ackroyd (Aireborough); 3, P. Holmes (Castleford). Foxes: 1, T. Sanderson (Thorne); 2, G. Brocklehby (Mexborough); 3, A. Hardcastle (Aireboeough). Pairs (Livebearers): 1, G.

Flinton (Scarborough); 2, Mr. and Mrs. K. Agar (Aireborough); 3, W. Blundell (Doncaster). Pairs (Egglayers): 1, Mr. Carrick (Castleford); 2, Mr. and Mrs. E. Stanton (Sheffield); 3, Master S. White (Retford). Breeders (Livebearer 1-10): 1, Mr. and Mrs. Chester (Retford); 2, H. Walker (Aireborough); 3, D. Perkings (Worksop). Breeders (Livebearer 11-20): 1, P. Lewis (Doncaster); 2, M. Walker (Aireborough). Breeders (Egglayers 1-10): 1, B. Jackson (Doncaster); 2, Mr. and Mrs. Blades (Bassetlaw); 3, Mr. and Mrs. P. Smith (Aireborough). Breeders (Egglayers 11-20): 1, J. Wood (Aireborough); 2, D. Greenwood (Immingham); 3, B. Jackson (Doncaster). A.V. Female (Livebearer): 1, W. Blondell (Doncaster); 2, A. Clayton (Immingham); 3, N. Blenkin (Bridlington). A.V. Female Egglayer: 1, W. Blondell (Doncaster); 2, A. Clayton (Immingham). A.O.V. Tropical: 1, Pete and Sylvia (Bridlington); 2, L. Fletcher (Doncaster); 3, Mr. and Mrs. Richardson (Scarborough). Tropical Marines: 1, A. Mawson (Worksop). Common Goldfish and Comets: 1, Mr. and Mrs. Steels (Retford); 2, L. Walker (Rotherham); 3, P. Bonsall (Worksop). Shubunkins, Bristols and Londons: 1, B. Sleight (Mexborough). Fancy Goldfish, Moors, Fantails, Orandas, Lion Heads: 1 and 2, J. Wood (Aireborough); 3, T. Tinsley (Rotherham). Breeders (Coldwater): 1, J. Cavell (Doncaster); 2, A. Ackroyd (Doncaster). A.O.V. Coldwater (including Native Marine): 1, N. Blenkin (Bridlington); 2, W. Blondell (Doncaster); 3, B. Sleight (Mexborough). Aquarium Plants: 1 and 3, T. Kilvington (Doncaster); 2, G. Clarke (Thorne). Amphibians: 1, A. Mawson (Worksop); 2, A. Hardcastle (Aireborough); 3, Mr. Topsy (Doncaster). There was a total of 437 entries from eighteen Societies Stands. Society with most points was Doncaster.

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ENTRIES totalled over three-hundred for the **Mount Pleasant A.S.** Annual Open Show which was well supported by the public. The results were as follow:— Class Ba: 1, C. Robinson (Stanley); 2, Mr. Hunt (K.A.A.); 3, I. Hymers (Novo's); 4, D. Russell (Stanley). Class B: 1 and 2, B. Robson (N.T.F.S.); 3, G. Quantrill (Priory); 4, P. Dewitt (Mt. Pleasant). Class C: 1, J. Irwin (Stanley); 2, T. Dixon-Cave (S.S.A.S.); 3, J. Robertson (Northumbrian); 4, J. Ovington (N.T.F.S.). Class Ca+b: 1, J. Dodds (Stanley); 2, 3 and 4, results not available. Class Da: 1, J. Surtees (Stanley); 2, J. Irwin (Stanley); 3, A. Harvey (Mt. Pleasant); 4, G. Gallan (Independent). Class Db: 1, J. Irwin (Stanley); 2 and 3, L. Southall (S.S.A.S.); 4, M. Campbell (Mt. Pleasant). Class Dc: 1, D. Wright (Independent); 2, C. Enright (S.S.A.S.); 3, P. Newton (Hartlepool); 4, A. Weir (Hartlepool). Class D: 1, P. Newton (H.A.S.); 2, J. Middlemast (Stanley); 3, F. Myers (Independent); 4, M. Campbell (Mt. Pleasant). Class Ea: C. Robinson (Stanley); 2 and 3, B. Foster (Bimbi); 4, A. Howgate (Stanley). Class E: 1, C. Minchell (S.S.A.S.); 2, P. Redman (Hartlepool); 3, J. Rogan (K.A.A.); 4, K. Nunn (Stockton). Class F: 1, E. Prythick (Ashington); 2, 3 and 4, J. W. Pells (Priory). Class G: 1 and 2, L. Southall (South Shields); 3, J. Bloomfield (Mt. Pleasant). Class H: 1, R. Nesworthy (Northumbrian); 2 and 4, C. Mallarby (Mt. Pleasant); 3, R. Ternent (Mt. Pleasant). Class J: 1, P. Wright (Independent); 2, B. Robson (N.T.F.S.); 3, A. Bloomfield (Mt. Pleasant); 4, R. Ternent (Mt. Pleasant). Class K: 1, B. Robson (N.T.F.S.); 2, A. Stevens (Middlesborough); 3, D. Campbell (Mt. Pleasant); 4 G. and D. McClure (Stockton). Class L: 1, F. Dyers (Independent); 2, R. Nesworthy (Northumbrian); 3, J. K. Alder (Hartlepool); 4, P. Taylor (Mt. Pleasant). Class M: 1, Mr. and Mrs. F. Darnden (Stockton); 2, R. Oconner (M.P.A.S.); 3, D. Russell (Stanley); 4, F. Johnson (Stockton). Class Ma: 1, Mr. and Mrs. Wright (S.S.A.S.); 2, D. Dryden (Mt. Pleasant); 3, G. and D. McClure (Stockton); 4, M. Campbell (Mt. Pleasant). Breeders Pairs N.bm: 1, F. Napier (S.S.A.S.); 2, C. Mallarby (Mt. Pleasant); 3, A. Steven (Middlesbrough); 4, Mr. and Mrs. Wood (Stockton). Breeders Pairs N.o.t.: 1, T. Marshall (N.T.F.S.); 2, R. Nesworthy (Northumbrian); 3, Mr. and Mrs. Wood (Stockton); 4, J. Robertson (Northumbrian). Class O: 1, E. M. Perkins (Ashington); 2, R. Hill (N.G.L.S.); 3, Miss D. Knibbs (Stockton Junior A.S.); 4, S. Wilks (Stockton). Class P: 1, X. Marshall (N.T.F.S.); 2, A. Duncanson (Priory); 3, R. Nesworthy (Northumbria'n; 4, G. Hurst (Mt. Pleasant). Class Q: 1, S. Wilks (Stockton); 2, D. Hammond (South Shields); 3, A. Campbell (Mt. Pleasant); 4, J. Rogan (Killingworth). Class R: 1, A. Clegg (Novo's); 2 and 3, R. Kirkup (Mt. Pleasant); 4, J. Irwin (Stanley). Class S: 1, A. Redford (Priory); 2, J. W. Pells (Priory); 3, R. Nesworthy (Northumbrian); 4, G. Hurst (Mt. Pleasant). Class T: 1, F. Lezeroyd (Novo's); 2, T. Marshall (N.T.F.S.); 3, C. J. Minchell (South Shields); 4, Mr. Marshall (N.T.F.S.). Class W: 1, E. Hodgson (Priory); 2 and 3 A. Duncanson (Priory); 4, P. Maddison (S.S.A.S.). Breeders Class Xbm: 1, E. Prythick (Ashington); 2, D. Dryden (M.P.A.S.); 3, J. Bloomfield (Mt. Pleasant); 4, C. A. Enright (S.S.A.S.). Breeders Class Xot: 1, Mr. and Mrs. Wood (Stockton); 2, J. English (N.G.L.S.); 3, A. Redford (Priory); 4, G. Lezeroyd (Novo's).

Best fish in show went to Class H: R. Nesworthy (Northumbrian) 81 points; Best Breeders went to four Snake Skin Guppies (Class Xot). F.B.A.S. Trophy went to Class Ea. Best Society Trophy: 1, Mt. Pleasant; 2, South Shields; 3, Stanley; 4 Priory.

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DESPITE the weather in East Anglia during the Bank Holiday weekend the **Great Yarmouth and District A.S.** "Exhibition 76" was a resounding success attracting over 1600 visitors. On display were over 3,000 fish with 164 display tanks and many furnished aquaria and tableaux.

Thanks go to the trade stands which supported the Exhibition and in particular to the Catfish Society of Great Britain who not only judged the exhibits but spent the weekend at the Exhibition with their own Society Stand. Congratulations go to C. Rumsby for winning the Best in Show for the second year running and Cathy Durrant for the same effort in winning the Junior Cup. First in Furnished Aquaria was P. Jacobs, and the First Award in the Tableau Competition went to C. Rumsby, R. and J. Durrant are also to be congratulated on their efforts with Local Salt-water Marines.

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THE **Midland Koi Association** Open Show, held in September, was a great success in all aspects, with about 400 people attending.

There were 22 entrants who between them entered 80 koi and the winners were:— Best overall—Gosford Trophy—won by G. Atkins with a Shusui. Second overall—won by A. and Sansia Danks with a Kohaku. Third and fourth overall—won by G. Claxton with a Ginrin Kohaku and a Ginrin Showa Sanke. Best M.K.A. Member: A. and Sansia Danks with a Kohaku. Best M.K.A. Sanke: R. Hodgson. Kohaku: A. and Sansia Danks. Sanke: R. Hodgson. Matsuba: G. Barlow. Metallic: M. Turner. Kin/Ginrin: G. Claxton. Hariwake: P. Gaule. Shusui/Asagi won by G. Atkins. Bekko won by A. and Sansia Danks. Utsuri won by R. Hodgson. Ohgon won by D. Hughes. Best 7 in. won by G. Claxton. Best 7-10 in. won by G. Claxton. Best 10-14 in. won by R. Hodgson. Best 14 in. and over won by G. Atkins. A word here about the best Metallic in Show, which was won by Mr. Turner. This fish was spawned by A. Danks two summers ago and given to Mr. Turner with some other fry for rearing. It's nice to see a home bred and reared fish take a place in the first Open Show in the country. Thanks to B. Hewins, M.K.A., D. Hollom, Y.K.S., and T. Furman, B.K.K.S. for judging the fish, not an easy job.

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NEW SOCIETIES

A new Society has been formed in the Liverpool area the title being the **Atlantis Fishkeeping Society.** At the first meeting held on 16th September the following Committee was elected: Chairman, J. Taylor; Secretary, G. Harvey, 50 Armley Road, Anfield, Liverpool L4 2UN; Asst. Secretary, A. Sutton; Treasurer, Mrs. P. Taylor; Committee Members, A. Bebb and Mrs. A. Sutton. The meetings are held on the second and fourth Thursdays of each month at St. Peters Church Hall, Albany Road, Aintree.

The **North Avon A.S.** meetings are held on the second Tuesday of each month at the Holy Family Meeting Rooms, Patchway Roundabout. The secretary is Mrs. K. M. Gadd, 17 Braydon Avenue, Little Stoke, Bristol.

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VENUE CHANGE

NOVO's Tropical Fish Club will hold future meetings in the Navy Social Club, 244 Westgate Road, Newcastle upon Tyne 4. Membership is free and all enquiries should be addressed to the Secretary, L. R. Lawson, 84 Grosvenor Road, Jesmond, Newcastle upon Tyne 2. Tel.: 812652.

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SHOW CANCELLATION

The **Walthamstow A.S.** Open Show which was to have been held in November has been cancelled.

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SECRETARY CHANGES

South Humberside A.S.: Mrs. A. Tyson, 242 Macaulay Street, Grimsby, South Humberside DN31 2EP. Tel.: Grimsby 55764.

Gloucester A.S.: D. W. Parry, 49 Oxstalls Way, Longlevens, Gloucester.

Rhondda A.S.: R. Richards, 37 Leslie Terrace, Llwyncelyn. Rhondda, Glam.

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SHOW SECRETARY CHANGES

Rhondda A.S.: A. Smith, 12 Glannant Street, Penycraig, Rhondda, Glam.

Swillington A.S.: D. and P. Birdsall, 6 Burley Wood Lane, Leeds LS4 2SU. Phone: Leeds 780437.

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AQUARIST CALENDAR

7th November: Halifax A.S. Open Show at The Forest Cottage Community Centre, Cousin Lane, Illingworth, Halifax. Details from D. Shields, Cobblestones, Gaineest, Kings Cross, Halifax. Phone Halifax 60116.

14th November: Bradford & District A.S. Open Show will be held at Textile Hall, Westgate, Bradford. Details from show secretary J. Cornforth, 15 Weymouth Avenue, Allerton, Bradford, W. Yorks.

20th November: Goldfish Society of Great Britain. General Meeting. 2 p.m., Conway Hall, Red Lion Square, London, W.C.1.

19th December: Village Bar A.S. open show, Birmingham. Details from show secretary, 81 Burston Road, Oldbury, West Midlands B68.

1977

13th February: Sheaf Valley A.S. Open Show will be held in the Dormer Twist Drill Ltd. Canteen, Cemetery Road, Sheffield. Benching 12.00 noon till 2.00 p.m. Details from Show Sec.: Mr. B. Moore, 57 Nicholson Road, Sheffield 8 or Tel.: 662382.

17th April: Nelson A.S. Annual Open Show at the Civic Centre, Stanley Street, Nelson. Details from R. McKenna, 52 Bath Street, Nelson, Lancs BB9 0NP.

24th April: Blakeborough A.S. Open Show; Further details later.

8th May: Bolton Gunners A.S. First Annual Open Show.

22nd May: Middleton and District A.S. 6th Open Show, Two shows in one! Tropical Section: 34 Classes. Coldwater Section 11 Classes. At the Civic Hall, Middleton (M.62—Exit 19).

26th June: Alfreton and District A.S. Annual Open Show at Alfreton Hall. Details and Show Schedules available later. P. W. Bonser, 10 George Street, Riddings, Derbyshire DE5 4GF.