NOVEMBER, 1966

2s 6d

Pet Fish

monthly

KB TROPICAL FISH KB

FISH OF SPECIAL INTEREST (IN LIMITED SUPPLY: IN STOCK 2nd OCTOBER)

1 only Oscar, 9"	130/-
1 only Clarias Cat, 12"	130/-
1 only Ophodies Barb, 4"	70/-
1 only Serrasalmo nattereri, 3½"	80/-
1 only Serrasalmo brandti	75/-
7 only Serrasalmo hollandi, 4½"	100/-
1 only Albino Clarias Cat, 5½"	35/-
1 only Female Pelmatochromis annectens	12/6
1 only Elephant Nose, 6"	37/6
1 only Siamese Fire Eel, 10" (damaged eye)	£5

LIVEBEARERS

GUPPIES	
Standard	3/- pr.
Half Black	5/6 pr.
Black Veil	8/6 pr.

MOLLIES	
Black	3/- ea.
Black Lyretail	5/- ea.
Green Veilfers, small	4/6 ea.
Adult Sailfin Black	21/- pr.
Green Veilfers, 2½"	37/6 pr.
Liberty	4/6 ea.

SWORDTAILS	
Red	3/6 ea.
Red Wagtail	3/6 ea.
Red Hi-Fin Swords	12/6 pr.
Berlin	4/6 ea.
Green	2/6 ea.

PLATIES	
Red Wagtail	3/- ea.
Moon	3/- ea.
Red	3/- ea.
Yellow Wagtail	3/- ea.
Comet	3/- ea.
Blue	3/- ea.

EGGLAYERS

CHARACINS	
Neon Tetras	3/6 ea.
	6 for 17/6d.
Black Neon Tetras	5/- ea.
Red Fin Tetras	3/- ea.
Flame Tetras	3/- ea.
Serpae Tetras	3/6 ea.
Lemon Tetras	2/6 ea.
Black Line Tetras	2/6 ea.
Glowlight Tetras	3/6 ea.
Beacon Tetras	3/- ea.
Congo Salmon Tetras	17/6 ea.
Copeina arnoldi	8/6 ea.
Nannostomus trifasciatus	6/- ea.
Hockey sticks, Auratus	6/6 ea.
Leporinus fasciatus	30/- ea.
X-Ray Fish	3/- ea.
Penguins	3/6 ea.
Black Widows	3/- ea.
Abramites Headstanders	35/- ea.
Metynnis schreitmuelleri	12/6 ea.
DANIOS	
Giant	3/6 ea.
Zebra	2/- ea.
Trout	2/6 ea.
Pearl	2/- ea.
Spotted	2/6 ea.
SHARKS	
Black	5/6 ea.
Silver	15/- ea.
Red Tail	5/6 ea.
Red fin	5/- ea.
RASBORAS	
Scissortails	3/- ea.
Einthoveni	5/- ea.

Firetail Rasbora	4/6 ea.
Harlequins	3/6 ea.
Urophthalma	4/6 ea.
KILLIEFISH	
Aphyosemion australe	14/- pr.
Aphyosemion nigranum	16/- pr.
Aphyosemion calliurum	16/- pr.
Aphyosemion bivittatum	16/- pr.
Golden Fundulus	15/- pr.
Aphyosemion calabaricus	16/- pr.
Panchax chaperi	10/- pr.
Panchax blockii	10/- pr.
Panchax playfairii	15/- pr.
BARBS	
Tiger	3/- ea.
Nigger	3/- ea.
Golden	3/- ea.
Spanner	5/6 ea.
Gelius	5/6 ea.
Albino Tiger	4/6 ea.
Clown	5/6 ea.
Tinfoils, 2-3"	25/- - 45/- ea.
Tinfoil	5/6 ea.
Cherry	3/- ea.
Adult Nigger	7/6 ea.
Partipentasona	3/6 ea.
Ember	12/6 ea.
Hasskii	8/6 ea.
CICHLIDS	
Jack Dempsey	4/6 ea.
Blue Acaras	3/6 ea.
Marble	6/- ea.
Firemouth	4/6 ea.

Severum	5/6 ea.
Festive Cichlids	7/6 ea.
Aequidens curviceps	6/- ea.
Angels, standard	3/- ea.
Angels, veil	7/6 ea.
Angels, black	6/6 ea.
Angels, 3"	15/- ea.
Keyhole	19/6 ea.
Discus, 5" pair	£18.10.0 pr.
DWARF CICHLIDS	
Pelmatochromis kribensis	8/6 ea.
Egyptian Mouthbreeders	4/- ea.
Apistogramma reitzigi	7/6 ea.
Haplochromis wingatii	15/- ea.
Apistogramma Ramirezi	7/6 ea.
Apistogramma agassizi	7/6 ea.
LABYRINTHS	
Three-Spot Gourami	2/6 ea.
Three-Spot Gourami, wild 3"	4/6 ea.
Three-Spot Gourami, adult	10/- ea.
Pearl Gourami	3/6 ea.
Pearl, adult pairs	30/- pr.
Opaline, 2"	5/- ea.
Thick-Lip Gourami	3/6 ea.
Dwarf Gourami	10/- pr.
Moonlight	12/6 ea.
Female Fighters	4/- ea.
Sparkling Gourami	7/6 ea.
Green Kissing Gourami	8/6 ea.

Pink Kissing Gourami	5/- ea.
Combtails	5/6 ea.
Osphronemus	12/6 ea.
Paradise fish	4/6 ea.
Male fighters	10/- ea.
Male fighters, extra large	15/- ea.
Male fighters, yellow	17/6 ea.
CATFISH & LOACHES	
Corydoras hastatus, dwarf	7/6 ea.
Corydoras punctatus	10/- ea.
Corydoras aeneus	3/6 ea.
Corydoras aeneus, adult	8/6 ea.
Corydoras paleatus	6/6 ea.
Corydoras julii	10/- ea.
Flying Fox	5/- ea.
Giant Kuhli Loach	3/6 ea.
Kuhli loach	2/6 ea.
Bushy Nose Plecostomus	15/- ea.
Sucking Loach, housemaid	4/6 ea.
Otocinclus	8/6 ea.
Botia hymenophysa	7/6 ea.
Botia, unidentified	7/6 ea.
VARIOUS OTHERS	
American Flags	3/6 ea.
Puffers	7/6 ea.
Orandas	7/6 ea.
Pom Pom Eyes	12/6 ea.
Scats	10/- ea.
White Cloud Mountain minnows	3/- ea.
Black Moors	7/6 ea.

Xenopus Laevis, Clawed toads 15/- ea. (These are purely aquatic and can be kept with fish of a reasonable size).

Live delivery guaranteed and all fish in good disease-free condition (in the event of any fish being dead on arrival bodies must be returned with post-mark of day of receipt). Please include 7/6 rail and packing charge with each order. All consignments of fish to be met at nearest main-line railway station (please state). Advice given of despatch.

Send for Catalogue and Lists

Keith Barraclough, 215 Gt. Horton Road, Bradford 7

YORKSHIRE Tel. 73372

Half-day closing Wednesday *Open until 8.00 p.m. Fridays*

PetFish

Monthly 2s 6d

Vol.1 No. 8
November, 1966

Subscription rates: £1 15s for 12 issues; 17s 6d for 6 issues (U.S.A. and Canada $5.00)

Editor: Anthony Evans

In This Issue

PetFish Publications

554 Garratt Lane,
London, S.W.17

Telephone LAKeside 2805

Advertisement Offices
47 Gresham Street,
London, E.C.2

Telephone MONarch 7644

Comments and Quotes

Life of fish sex cells ● Predators are of value ● Biting the hand that feeds ● Drugs from fish ● 'Niffy' breeding sites

How Long to make a Fish?

WHEN eggs and sperms of fishes are deposited in water during the spawning these germ cells have only a limited time to make contact and achieve fertilisation. This is because the eggs in water soon undergo changes (hardening) making them incapable of being fertilised and because the sperms remain actively swimming for only a brief period in which they can reach an egg. Recent work on trout has given some actual figures for the time limits of survival of eggs and sperms.

Trout eggs, like other fish eggs, swell in water after being extruded from the female fish, their maximum size being reached in 20 to 25 minutes. They have been found to be capable of fertilisation throughout this time, although the ease with which fertilisation can occur decreases progressively throughout the period, so that a greater proportion of eggs fails to develop when fertilisation is attempted towards the end of the swelling period.

Sperms have a much shorter period in which they remain viable, their maximum activity occurring in the first 15 seconds and this declines from then, until after 2 minutes in water their movements have ceased. These results were reported by Dr K. Buss and Dr K. G. Cori in THE PROGRESSIVE FISH CULTURIST (U.S.A.), and their investigations showed that if the eggs and sperms are artificially shed and kept out of water they can still effect fertilisation after much longer periods than those quoted above.

For goldfish breeders who use hand-spawning techniques these findings indicate that delays in bringing eggs and sperms together, even slight delays, will seriously affect the number of fertile eggs obtained once the shed eggs are placed in water.

Problems of Fish Culturists

ASSUMING that you were trying to breed and rear as many fish as possible to as large a size as possible under artificial conditions would it be a good thing or a bad thing to have animals that attack fish in the same area? The answer is not as simple as might be assumed, for at the international meeting of fishery biologists held at Reading in September evidence was put forward to show that fish predators can be desirable auxiliaries in keeping stocks healthy. This is because these natural predators bring about the removal of weak and deformed fish from the breeding stock, such fish being the ones most easily falling as prey.

The object of the September meeting was to survey the biological basis of the production of freshwater fishes in ponds, and among other matters discussed was the influence that the feeding behaviour of some fishes has on their production. Even with plentiful feeding it proves impossible to raise the numbers of fishes that show territorial behaviour

to the theoretically possible figure. These fish continue to compete with one another although food supplies are big enough for all simply because it is their habit to keep a region of the pond or stream as their own territory and will allow no other fish of the same species to feed there. This is, of course, a problem that aquarists meet in keeping some aquarium fishes, the cichlids in particular, in numbers in tanks.

Some Pet Fish!

THE scarred hands of Dr Anne Alexander of Durban, South Africa, come within inches of the snapping jaws of a five-foot shark every day.

While feeding the female shark with chunks of meat or fish held in a pair of forceps, she tests its reaction to different types of food.

The 31-year-old research scientist, who formerly worked at Cambridge University, is trying to discover whether the taste of food determines whether a shark will attack certain prey, including human beings, in preference to others.

This shark has bitten her three times. Once, to get more information about shark bites, she waited until photographs could be taken of her wounds before having them stitched.

Her guinea pig at Durban's Oceanographic Research Institute is a two-year-old ragged-tooth shark, named Bess.

Dr Alexander manoeuvres a small net over the shark's nose to bring it to the surface at feeding time. Then she holds the nose with her left hand while offering a piece of fish or meat in the forceps with her right.

Despite her past experience of getting bitten, she seems unperturbed as the rows of teeth viciously snap shut.

Bess is being tested to study reaction to the sight, smell and taste of various foods.—PORTSMOUTH EVENING NEWS

Drugs from Fish

THE poison secreted by fish and other marine animals may one day provide man with a new range of drugs.

According to an Australian scientist, Dr Robert Endean, experiments have shown that chemicals produced by some shell fish may be a means of making paralysed muscles contract, and that the poisons made by sea cucumbers can cause tumours in mice to dwindle.

Writing in the SCIENCE JOURNAL, Dr Endean claims that the doorway to a vast underwater storehouse of new therapeutic drugs 'is now ajar'. He says that many of today's drugs, such as morphine, atropine and curare, were developed from chemicals made naturally by plants.

Among fish which Dr Endean and his team are screening are certain species of mullet and goat fish which produce chemicals giving rise to nightmares and hallucinations when consumed by man.

The red-beard sponge has been found to produce a useful antibiotic and some types of shell fish destroy disease-producing bacteria.

'Niffy' Breeding Sites

AN almost totally aquatic amphibian (contradiction in terms though that seems to be) kept in aquaria by many aquarists is the South African clawed toad (*Xenopus*). It is also well known for its use in medical laboratories in human pregnancy tests. An observation by a South African biologist seems to show that this toad is able to detect the presence of ponds in which the water is a bit 'high' and actually seeks these out for breeding.

Dr S. S. du Plessis, who reports this in NATURE, has noticed that when the fish ponds at the Provincial Fisheries Institute in Lydenburg are filled with water and 'manured' with fowl manure to encourage development of live foods for fish breeding, within 2 or 3 days large numbers of *Xenopus* make their way to these ponds by travelling overland at night. They then commence spawning in the ponds, and by the time the 'manuring' has led to formation of a rich plankton growth the ponds are teeming with *Xenopus* tadpoles ready to feed greedily on it. It is likely that the toads 'smell out' the water which will be so favourable for their tadpoles, when they surface for breathing in nearby ponds.

Film Show Suggestion

SOCIETIES planning film shows for meetings in the winter months might like to know about the Central Electricity Generating Board's film called 'The Lonely Places'. Its theme is the consideration given to the effects on local wild life of siting power stations in out of the way places, usually by major rivers or on the coast.

The efforts made to safeguard fish life at Trawsfynydd and Rheidol in Wales are featured. At Rheidol, a fish lift and fish ladder have opened up twenty miles of new spawning grounds. Vigorous research is carried out by the Generating Board into all forms of marine life. The film shows the experiment at Roosecote power station, Barrow-in-Furness, which discharges cooling water into the land-locked Cavendish Dock. The slightly warm water causes an unusual growth of weed which threatened to choke the screens guarding the water intake. Grass carp which feed on this weed have been imported from Hong Kong and the result of the experiment is awaited with interest. The film also shows the research being carried out at Bradwell nuclear power station on the Blackwater Estuary, Essex. Water which has passed through the condensers is still warm when discharged and biologists are studying the way molluscs and fish grow in these conditions.

'The Lonely Places' is in colour, runs for 23 minutes and details for free borrowing copies in 16 or 35 mm can be obtained from the Film Library, Public Relations Branch, Central Electricity Generating Board, Sudbury House, 15 Newgate Street, London E.C.1.

Give these FINE BOOKS for Christmas

55s

THE INNES BOOK

Exotic Aquarium Fishes

by William T. Innes

This 19th Edition, revised, is the very latest. Over 100 colour illustrations including the original Innes colour plates, unique to this edition. INSIST on the 19th Edition, revised—not to be confused with copies of the 1st Edition. 55s.

VISTA AQUARIUM PAPERBACKS

Acclaimed by reviewers in many journals. Give a new light on aquarium-keeping. All four books make an ideal Christmas present. 10s 6d each

Each title 10s 6d

. . . . and Don't Forget Our Famous FISH FOODS AND REMEDIES

LIQUIFRY—first food for baby fish. Red tube for Egglayers; green tube for Livebearers: 2s 6d per tube

CHLORELLA MEAL—freeze-dried Chlorella. Colour and growth food: 2s 6d for 7 grams, 5s 3d for 28 grams

BIOL—dried plankton. For colour and growth: 2s 6d for 7 grams, 5s 3d for 28 grams

TUBI-CUBES—freeze-dried Tubifex. 5 gram packs: 4s without feeder, 4s 6d with special feeder

LIQUITOX—the specific treatment for fungus and fin-rot. Enough for 10 gallons, 2s, for 60 gallons, 6s 9d

Available from your dealer or in case of difficulty from:

INTER-PET 18 CHURCH STREET DORKING SURREY

LETTERS

Extermination of Hydra

IN reply to the request for aquarists' experiences in exterminating hydra by use of batteries and wire (PETFISH MONTHLY, September: Readers' Queries, 'Aquarium Polyps'), I have used this method myself with great success in dealing with both hydra and snails. In one tank in particular which I treated in this way there were 1 week-old giant gouramies (*Colisa fasciata*), and the fish seemed to feel no ill-effect and were raised quite normally.

The one fault that I could find was that this method killed *Vallisneria*. I could see no reason for this as all other plants seemed quite unaffected (*Bacopa*, wisteria, *Hygrophila*, *Cryptocoryne*).

A 4½ volt battery was used, with a wire connected to each terminal and a penny attached to each free end of the two wires. The pennies were then dropped to the gravel at opposite ends of the tank, and left for a period of 4 hours. Results are not immediately visible but the following day hydra will have disappeared and snails can be siphoned from the bottom. It will be noticed that bubbles rise from one penny, and that the other becomes lightly coated green, but from my own experience this has no effect on the fishes, be they large or small.

Enfield, Middlesex W. BARKER

F.B.A.S. Defended

IT is with regret that I read in the August issue of PETFISH MONTHLY another letter attacking the Federation of British Aquatic Societies. This time by Mr G. C. B. Thompson of the Three Counties group, and again this letter shows an utter ignorance of F.B.A.S.

'F.B.A.S.' is talked about as if it is some supernatural deity, a single being. It is, of course, a federation of clubs that have banded together to pool their resources so that by doing so they may enjoy their hobby the more. The F.B.A.S. has long recognised that an organisation that is run by part-time officials could not hope to successfully cater for the whole country. I think it was with relief on the part of most F.B.A.S. officials that other federations came into being. Today it is welcome. Indeed, if a request is received to affiliate from a club already covered by one of the other federations we suggest that they affiliate to this for the obvious reasons. Several clubs in South Wales are affiliated to the F.B.A.S. and by their own efforts have gone from strength to strength. The F.B.A.S. has recently been dropping hints that the time is here when they could run their own area. This would enable them to develop, and, it is hoped, strengthen our ties with them. The Irish Federation is affiliated as a unit to the F.B.A.S. It remains sovereign to itself, runs its own affairs but has this special attachment to the F.B.A.S.

Now, if the Three Counties group, some of whose members are affiliated and some are not (a point here, I think), is dissatisfied with the F.B.A.S. and the way that the spare-time workers are running it, then the answer is simple in the extreme: (a) leave, (b) attend the A.G.M. that is held every December and elect those people that they think would run it better. From this remark it can be taken that the Three Counties clubs are conspicuous by their absence at the four F.B.A.S. meetings a year, and therefore contribute nothing to the organisation apart from their subscription which averages £1, and that on their own admission has to be written for. Most of the Three Counties clubs run open shows and apply to the F.B.A.S. for championship class trophies. These are won outright and cost about 30s each, according to the design. Therefore the F.B.A.S. has a financial loss of approximately 10s every year from the Three Counties from this item alone, apart from the literature they receive. Not bad, is it, from a useless F.B.A.S.?

For years the F.B.A.S. has issued lists of judges and lecturers. I have one to hand now dated 1949, which to my knowledge has been superseded five times. The latest revised list was printed in June this year, and amendments are published quarterly. Mr Thompson is aware of this fact as his name appears in the current list. Whilst on the subject of judges and lecturers, consider this. It is not the duty of these people to visit your club. Most do it for the fun of it, barely covering expenses. So if you cannot obtain speakers, perhaps your club is not a pleasant one to visit.

The production of fish standards is a subject upon which I could write a book. Suffice to say that the F.B.A.S. has always produced fish standards and will continue to do so. Everyone in the hobby is a judge, or thinks he is, and wide agreement must be reached before a new standard is printed. This proves to be a slow job but better this than riding roughshod over a group of aquarists and causing resentment.

Having answered most of the points made by Mr Thompson, may I make this plea to the Three Counties. Do not set up another federation in the south, but take over the F.B.A.S. Supply clubs with all the judges and lecturers they need. Keep up an endless stream of fish standards and sell them in booklet form for less than the price of ten cigarettes. Type and duplicate all current information and distribute it. Hold four meetings a year and some of us may attend, but only to criticise the work you are doing. We will not bother to inform you of any change of addresses or indeed give any help whatever, as we will be too busy writing to PETFISH MONTHLY complaining of your uselessness.

And now, as I am not seeking engagements through your pages, I find it unnecessary to sign myself as a judge and lecturer or to state that I hold any official position in the F.B.A.S., as none of these acts would add one iota to the facts or opinions stated.

READER
(name and address supplied)

Catching your own Fish

YOUR column-writer 'Arpee' has invited letters from readers of PETFISH MONTHLY about his Personal Comment. I am a pet-shop owner with about 30 tanks of tropicals and therefore feel able to say something about Arpee's comment (PETFISH MONTHLY, October) on dealers being 'reluctant to give you the free choice which

in my view you are entitled to'.

My mind boggles at the vision of my customers being handed nets and being invited to make their own catches, particularly on our busiest trading days. I wonder what would happen to our net for one tank and holding jar for one tank system then? I wonder what my tanks would look like after a day of such activities and what I would do about the smashed cover glasses, broken plants and fish that had been dropped or driven to jump out on to the floor? Would I still be asked to replace the fish that died, after their removal from the shop, because of injuries received during netting? Mr Arpee—you have yourself written that 'netting fish is an art' (PETFISH MONTHLY, September), and although I would prefer to describe it as a skilled technique, most of my customers acknowledge by their comments that we are much better than they are at the job!

Allowing the customer to choose the individual fish he wants is another matter and I do this as far as possible. It is amusing, however, to see how often the customer becomes less sure about the fish he has chosen once your net is in the tank, or once the fish is in the bag, because—hey presto—the colours and deportment of all the fish change. Some shops meet this matter by giving fish prices as a range instead of a single price. Then the chosen fish (usually one of the larger ones) is assessed as costing sixpence or so more, which compensates to some degree for the extra time involved in picking it out.

Fish cannot be treated like goods on the shelves of a super-market (and even there customers are not allowed to handle or weigh up non-packaged items!). It would be a sad day for me to see any living creatures treated as if they were such goods.

DEALER
(name and address supplied)

Can Fish Think?

I DOUBT whether Mrs Rothwell's short-tempered friend (PETFISH MONTHLY, October) can be a very successful aquarist! Also, I have yet to see an 'astonished' fish!

Although many laboratory experiments have shown that the actions of fishes can be controlled by a kind of reward and punishment procedure (reward being food and the 'punishment' usually being a mild electric shock rather than a 'smart tap'!), this is no evidence of a thought process and perhaps is an indication of quite the opposite. Cockroaches have been trained in the same way. Where thinking is involved the organism (certainly in the instance of man) is more likely to break away from or resist such simple training procedures.

Prize Letter

Fighting between fish is likely to be the result of instinctive processes such as the natural guarding of a small part of the tank as the fish's own territory. I am of the opinion that the continual application of 'punishment' to try to stop such actions rather than the fish-keeper's meeting the natural requirements of the fish by giving it a larger aquarium comes under the heading of cruelty.

Manchester 12 T. HILLS

New to the Hobby

I AM a completely new entrant into the hobby of fishkeeping and have only just set up my first tank of tropical fish. Female opposition within the household having been overcome, I entered my local aquaria with the purposeful intention of purchasing what was described to me as a 'starter set', this comprising a small tank 18 in. by 10 in. by 10 in. Inside the shop I found a most helpful aquarist who very quickly dispelled my doubts and before I knew where I was I had purchased the necessary equipment and a tank 30 in. by 15 in. by 12 in.

Having taken the plunge I was delighted to find your magazine entirely devoted to my new hobby. I remember many years ago, on holiday, buying a photographic magazine to while away a train journey and although I was very attracted by the pictures the accompanying articles may as well have been written in a foreign language for all that I could understand. I was determined, however, to learn something about photography and I quickly discovered that I was able to learn a great deal more from regular magazine reading than from text books. I am hoping therefore that a regular order for PETFISH MONTHLY will do the same and I look forward to reading articles especially devoted to the beginner.

Like many photographers, those aquarists with whom I have come into contact in these early stages appear to be only too willing to impart their knowledge to the beginner, and I am happy in the knowledge that the hobby of fishkeeping can be expanded as fancy and finance dictate—I hope!

Houghton-le-Spring, Co. Durham G. ROBINSON

Which Hormones?

ON behalf of the Fancy Guppy Association I would like to reply to Mr B. Barber's letter appearing in the September issue of PETFISH MONTHLY. He requests that the F.G.A. publish a list of hormones whose use is allowed; he is confusing the term 'discourage' with 'disallowed'.

Through the media of our monthly journal and through lectures at our Section meetings, our membership have been instructed in the advantages and disadvantages of introducing these chemicals into their tanks. The term 'of which little is known' is quite clear to them. This rule was made for our members participating in F.G.A. Shows and is merely a reminder that some of these hormones can prove dangerous to those exposed to contact with them.

We believe in the adage: 'A little learning is a dangerous thing' and couldn't possibly publish, as Mr Barber puts it, 'a list of hormones whose use is allowed' because we haven't debarred any—merely discouraged.

JIM KELLY
Manchester *Chairman, Fancy Guppy Association*

Co-ordination Between Federations

IN the July issue of PETFISH MONTHLY Mr A. G. Jessopp, chairman of the Federation of British Aquatic Societies stated 'the Association of Yorkshire Aquatic

Continued on page 259

A course for the would-be breeder of tropicals

Part 7

Breeding the easier Bubble-nesters

By D. B. McINERNY
(*McLynn's Aquarium*)

THIS month, continuing the discussion of breeding of fish in rainwater, we consider some members of family Anabantidae.

A charming little fish, attractive, peaceful, and different in more ways than one, is *Trichopsis pumilus*. The nickname I gave this fish—sparkling gourami—has been generally adopted throughout the world, which bears out my first impression, for when seen in brilliant sunlight it can sparkle as though covered with jewels.

It differs from other anabantids in that it builds a bubble nest, not at the surface of the water, but under a horizontal plant leaf some 4 or 5 inches above the sand, and it makes a croaking noise like its cousin *Trichopsis vittatus*. Though the fish is at maximum 1¼ inches long, the grating sound produced by the male when courting can be heard through the water and the glass sides of the aquarium from a distance of 20 feet!

Sexing of adults at first seems difficult, for both are the same size, have the same shaped fins and are equally colourful, but an unfailing identification is that whilst the female has a straight row of reddish brown dots from eye to tail, the male has, in addition to this, a second arching row of dots above this straight line.

A breeding tank 24 in. by 8 in. by 8 in. will, if divided in half, easily accommodate two breeding pairs, one in each side. Place an inch layer of well-washed sand in the bottom of the tank and fill to a depth of 6 inches with rainwater at 80°F (26°C). In this plant several small sagittarias, leaving a space in the centre towards the front of the tank for one plant of *Cryptocoryne hartelliana* or a *Hygrophila stricta*. The sagittarias are merely to afford refuge places for the female. The horizontal leaves of the *Cryptocoryne* or *Hygrophila* will be used for holding down the small bubble nest.

The males are not very aggressive, but the female must have somewhere to rest while he builds his nest. During this time he will display in front of her and emit the rapid vibrating croaking noise. The nest is not very large, about ½ in. long by ¾ in. wide, tucked under a flat or arching leaf growing horizontally in the water. When sufficiently excited the pair embrace, eggs are expelled, picked up in the breeders' mouths and stowed amongst the bubbles in the nest beneath the leaf.

Once spawning is over the female serves no more purpose and should be removed, taking care not to disturb the nest. The male now tends the eggs, renewing any bubbles in the next which burst or escape. The eggs hatch in 72 hours and dozens of tiny fry can be seen, suspended tail down beneath the leaf. Should these disappear from view during the next day do not be too worried. It is unlikely that the male has eaten them. Search around and you will see that he has transferred the brood to a position under another leaf.

Male paradise fish with bubble nest at the water surface whilst his mate at the bottom right waits to be led to the nest for spawning (this photograph appeared on the front cover of last month's issue of PFM)

The fry are free-swimming on the sixth day after spawning, and now the male can be removed; but use a fairly large mesh net, as it is almost impossible to catch him without also netting the widely spaced free-swimming fry as well. Use of a net with a large mesh allows the babies to pass through, when the male is

gently and slowly lifted out. First food is Infusoria; continue this for 3 weeks. After a week add a little brine shrimp to this diet, and in 2 weeks give a little micro worm. From ¾ in. length the babies will take fine dried food.

Colisa chuna (honey gourami), though not so small as *T. pumilus*, but smaller than the dwarf gourami, is attractive and peaceful. The males when adult have an overall orange-gold tone, with a blue-black chest. For breeding these use a 24 in. by 8 in. by 8 in. or smaller breeding tank, filled with rainwater at 80°F (26°C). Plant it more densely and provide some floating plant, such as water lettuce or floating fern, for the male will utilise these in building his bubble nest at the surface.

When courting his mate the male will be adorned in his best colours and display in front of her, up-ending himself till he looks as though he is sitting on his tail fin. Spawning is similar to *T. pumilus*. Adopt the same procedure, removing first female, then male, as previously described, and follow on as before.

For the blue gourami (*Trichogaster trichopterus*) use a 30 in. by 12 in. by 12 in. tank, filled with rainwater at 80°F (26°C) and plant thickly, making sure the female has plenty of refuges to get away from the usually aggressive male. Surface plant is not essential, as the eggs float, whether in a tight or loose nest. The pair embrace in typical anabantid style, but after spawning the female must be removed before she is damaged or killed. The male should be removed once the fry are free-swimming.

The brood may number from four hundred to four thousand. The aquarist with limited space should not attempt to raise all the fry. Keep only those which grow and develop well. Overcrowding will stunt the lot, aggressiveness will develop when the young are 1 inch long, and it is unlikely that a huge quantity can be sold to other aquarists.

Use exactly the same procedure for the opaline gourami. Since the broods of both these species are likely to be very numerous, much larger quantities of Infusoria will be required if a great number are to be raised.

Fishes of the genus *Macropodus* are often considered to be very aggressive. Personally, I have not found this so. The species *opercularis* (paradise fish) grows to 4 or 5 inches when adult. Naturally, it should not be kept in the same tank with young neons, mosquito fish etc., but if kept with medium barbs such as tigers, niggers and fishes of this size it rarely does any harm.

A breeding tank 24 in. by 8 in. by 8 in., filled with rainwater at 80°F (26°C) and thickly planted, will suffice for breeding one pair. Watch the male for aggressiveness towards his mate. He is unlikely to damage her if she is well filled with roe and therefore agreeable to spawning; but if she has no eggs and no inclination to breed she is likely to flee from him and hide in the plant thickets; frustrated after building his nest, he may savage her. If this occurs it is much more the fault of the aquarist than the temperament of the male. If all goes well and spawning occurs, treat them in exactly the same way as explained for the blue gourami.

In *Macropodus cupanus dayi* (spear-tailed paradise fish) we have a medium-sized paradise, which is not aggressive. Unlike the former species, which has two filaments extending from the top and bottom of the caudal fin, this species has extended rays in the centre of the fin; hence the spearhead shape. The body is not striped with red and bluish-green vertical bars, but is a rusty chocolate overall. The outstanding feature is that all the fins are outlined with an electric blue. It rarely grows to more than 3 inches, and of this 1 inch includes the tail. It may be kept safely with fishes of the size of neons, flames, harlequins, zebras etc. Though the sexes are similar, the female's body is thicker, and although she has the extended point on the tail, this is not so long as that of the male.

They will breed quite happily in a 24 in. by 8 in. by 8 in. breeding tank filled with rainwater at 80°F (26°C) and moderately well planted. Males rarely damage females, and then only if they are not in a condition to spawn. Mating includes the usual anabantid embrace after the male has built his nest. The eggs are stowed in this nest, after which the female may be removed. Spawning is over once she loses interest in the male, and persistently swims away looking for food or a place in which to rest. Once the fry are free-swimming the male may as well be removed. The fry are small and require Infusoria for the first 2 weeks, and then brine shrimp and micro worms can be fed to them.

F.B.A.S. Standards under Discussion

AT a recent delegates' meeting of the **FEDERATION OF BRITISH AQUATIC SOCIETIES** in London the allocation of points for the judging of marine aquaria in the F.B.A.S. Guide was discussed. Mr Essen (delegate for Riverside A.S.) said that members of his Society did not entirely agree with one aspect of the guide. Mr Essen suggested that instead of the 10 points allocated for planting in an ordinary furnished aquarium being re-allocated to compost and rock-work in a furnished marine tank, the points would be better applied for the clarity of the water. At the judges' and lecturers' conference on 25th September the whole question of the guides for furnished aquaria came under discussion by those present. The general opinion of the audience was voiced by Mr J. Stillwell, who proposed that the Federation's guides for all furnished aquaria should be subjected to a complete revision. This proposal was fully discussed and agreed upon and a new guide for the judging of furnished aquaria (all types) was formulated.

F.B.A.S. standards for goldfish varieties were also discussed, as this matter had been raised at a previous delegates' assembly, when it was agreed to leave this to the

judges' conference, the general opinion being that the F.B.A.S. Standards were inadequate for present-day use because of the increasing recognition of Standards issued by the Goldfish Society of Great Britain. At the previous meeting, the question of the adoption by the F.B.A.S. of G.S.G.B. standards had been raised, and it had been said that there was a possibility of both organisations meeting to discuss this point. At the conference, however, after much discussion, it was revealed that certain G.S.G.B. members were of the opinion that, because of the lack of experienced coldwater aquarists on the F.B.A.S. Council and judges and standards committee, there was no common ground for a meeting between the two, and that the adoption of G.S.G.B. Standards by the F.B.A.S. was therefore at present out of the question.

Additional discussion was given on the disqualification of fishes at shows and the position of the judges with regard to this. A motion by Mr D. Ellis, amended by Mr F. Stone, 'that excluding furnished aquaria, nothing other than fish or water should be shown in the container (other than an aerator where necessary)' was carried and will come into effect from 1st January 1967. This was in answer to enquiries received about the position of the F.B.A.S. with regards to gravel in the bottom of show containers. It was also carried 'that diseased fishes should be subject to disqualification' and a recommendation was approved that heavily gravid fish should not be exhibited.

Breeding Lace Gouramis

I have a pair of lace gouramis in my community tank and they are now about 3 in. long and nicely coloured. I should like to try to breed them and would be glad of any hints on how to do this successfully.

Move the fish to a separate tank (at least 18 in. by 10 in. by 10 in.) containing matured water. Feed well, and this, together with the raising of the temperature (by degrees) to 80° F (27° C) will bring them into breeding condition. The breeding tank can be planted thickly at one end with a good oxygenator such as elodea or hygrophila. This will help to keep the tank fresh but it is seldom necessary for the female's protection since the males rarely attack during the courtship. After the blowing of the bubble nest and the spawning the female can be removed. This must be done very gently so as not to disturb the nest and one way to accomplish this is to wait until the female is at one end of the tank away from the nest and then trap her there by placing a sheet of glass between her and the male. She can then be removed quickly. Aeration assists in maintaining the tank's freshness but it should be used very gently in order not to disturb the nest. Fry hatch within 24–48 hours and the male keeps up a constant watch, blowing back any eggs that fall out of the nest. The fry are free-swimming after 3 days and the male can then be removed. The fry do well on hard-boiled egg yolk filtered through a piece of muslin or on Liquifry for egglayers and progress to dry fried food, newly hatched brine shrimps and small *Daphnia*.

Coldwater Catfish

I have recently bought a tiny coldwater catfish to go in my goldfish tank. The dealer assured me it would not harm the goldfish—my friends assure me it will. So far it appears to be perfectly harmless and spends all its time hiding under the elodea. Is it a danger to the other fishes?

Both your dealer and your friends are right! Small coldwater catfish can usually be kept for some months in friendly relationship with goldfish in a medium-sized well-planted tank provided that they are well fed with live foods such as small garden worms and *Tubifex* worms. They are nocturnal in habit, feeding at night and hiding quietly during the day. Unfortunately they have prodigious appetites and grow at an alarming rate. They very swiftly outgrow the other tank inhabitants and soon cannot be trusted with the other fishes, specially if these are smaller. They can never be trusted, no matter how small they are, with the fancy, slow moving varieties of goldfish to whose fins and eyes they do great damage. They are best kept in separate tanks and even in ponds it is preferable to use bottom-feeding tench as scavengers.

Body Parasites

My goldfish keep rubbing themselves against the bottom of the tank. I understand that this can be a sign of white spot but I can find no trace of this on them.

If the fishes are continually rubbing themselves against the tank base or rocks it would be an indication that they are feeling irritation from skin parasites of some kind, but not necessarily those of white spot. Gill worms or flukes are very common parasites. They spread all over the fish's body and badly infected fish may show spots of blood on the fins and greyish areas on the body. The easiest way to treat this is to hold each fish in a net in a solution of one teaspoonful of Dettol to a quart of water for 15 seconds; the fish should then be placed in a container of clean water. Treatment can be repeated once again, 24 hours later. Remember that both the Dettol water and the clean water must be of the same temperature as that in which the fishes have been living. Furthermore, gill worms are free-swimming so that the tank in which the infected fishes lived must be stripped, and disinfected, likewise any nets that have been used.

If your best male Guppies are suffering from split fins, then here is one solution . . .

"That's Torn it!"

By JIM KELLY

(Chairman, Fancy Guppy Association)

ASK the average Englishman when the Angevin Glory figured in this island's history and he will just shrug his shoulders and admit he hasn't a clue; yet inform him it started just one hundred years after the Battle of Hastings and he will immediately give it a date. Much the same thing happens when the subject of genetics is mentioned in fishy circles—most fishkeepers have a vague knowledge of the subject but veer away when one starts to get technical. 'X' marks the spot where their interest flags!

Therefore I hope readers will forgive me if I take the coward's way out and steer a middle course; after all, the only time a whale gets harpooned is when he comes up to spout, and all theories since the beginning of history have quickly found their critics.

Ask today's fancy guppy breeder what he considers his biggest problem and it is a chopped rib to a broken chopstick that he will answer: 'Split fins!'. The pattern is so familiar. Your fish are at their prime, the show you have set your heart on winning is very close, when, overnight, their tails split wide open and your dreams of a red card fall apart.

Now the strange aspect of this complaint is that despite the fact the female guppy has fins equally as big as her male partner they rarely tear; fin splitting seems to be restricted to large-finned males.

In the early days of guppy breeding the emphasis

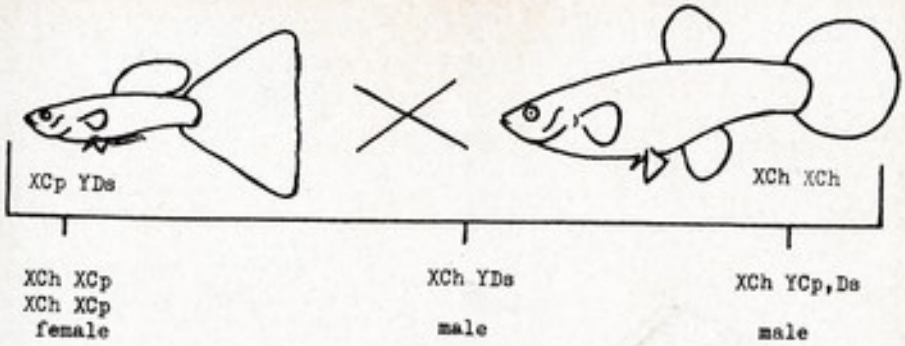
Descent through the MALE line

	Split-finned male	Female	Offspring
(*A*)	Y XS	X X	Y X (unafflicted son)
(*B*)	Y XS	X X	Y X (unafflicted son)
(*C*)	Y XS	X X	XS X (carrier daughter)
(*D*)	Y XS	X X	XS X (carrier daughter)

Descent through the FEMALE line

	Male	Carrier female	Offspring
(*E*)	Y X	XS X	Y XS (split-finned son)
(*F*)	Y X	XS X	Y X (unafflicted son)
(*G*)	Y X	XS X	X XS (carrier daughter)
(*H*)	Y X	XS X	X X (unafflicted daughter)

Expected results of pairings (*A*)—(*H*): for details see the opposite page



Results of crossing deltatail male with female having unpigmented fins

was on the short-tail varieties and the menace of torn caudals rarely manifested itself in our tanks, but with the onset of the broadtail in the post-war period this complaint spread faster than a forest fire and nearly every show bench contains at least one example.

As is common with most 'bugaboos' in the hobby, everything and anything has become suspect: sharp rocks and knife-edged plants like *Vallimeria* and Amazon swords were blamed; the guppy was accused of backing on to the sharp edges of these plants during his courtship dance, but this reason was soon proved wrong when guppies split their fins in bare environments.

Then the scientists took over and claimed that lack of minerals in both the water and diet were to blame; shortages of calcium and phosphates were suspect, but even this theory was quickly disproved.

For a while the battle raged. From across the Atlantic the suggestion that a shortage of the vitamin B_{12} was responsible occupied the pages of the aquatic press but, like a comet flashing across the sky, it quickly fizzled out.

Finally, having exhausted all other possible reasons, breeders turned to genetics and laid the blame fair and square on the doorstep of too close inbreeding; here at last seemed a reason that began to make sense. After all, baldness in the human male is handed down from generation to generation and, like split fins, is in the main associated with the male sex.

Assuming that heredity was the culprit, let us see what would happen if the gene responsible was attached to the X chromosome. For the benefit of the beginner, fish, like mammals, are designated as XX in the female and XY in the male.

In the chart showing the results of several different crosses (*A–H*) these are the symbols used:

X Y: Normal male, not subject to fin splitting.
X X: Normal female, not subject to fin splitting.
X S: Gene associated with Y in the male and X in the female responsible for tearing of the caudal fin.

The inheritance pattern of splitting will depend on whether the father or the mother's germ cells contain the defective X chromosome (it could, of course, be carried on the Y, but more about that later; for simplification I have considered the X only) causing the caudal to tear.

With the split-finned father (left-hand side of the chart), all the sons escape the complaint because only the normal Y chromosome of the father (*A* and *B*) are involved in the conception of male guppies. All the daughters, however, inevitably receive a defective X chromosome (*C* and *D*) and thus become carriers of the affliction. Such carrier females (right-hand side of the chart) run a 50% chance (*E* and *F*) that any one of them will bear sons that will have split fins eventually and any daughter will carry the defect (*G* and *H*): should this complaint, for the want of a better word, be carried on the Y chromosome, readers can very easily work out the results for themselves by using the same chart.

So much for that theory. Now to look a little closer at the genetics as applied to the deltatail guppy, the shape so prone to splitting. Albert J. Klee (see references) in the U.S.A. proved that there is no such thing as a gene for breeding true deltatails. This type is produced when the male fish carries the gene Ds responsible for the double sword caudal shape in combination with a number of female genes, most important of which is the Cp.

To avoid confusion it should be stated that the letters Cp simply stand for 'caudal pigment', a gene attached to the X chromosome which produces those beautifully marked blue to black pigments, so beloved of modern guppy breeders, in the fins of the female.

In his experiments Al Klee crossed the perfect delta male (XCp YDs) with a XCh XCh female. The latter produces females with unpigmented fins (the original of long ago); sometimes the base of the caudal fin in the caudal peduncle region shows a slight trace of yellow, speckled with fine black dots. The diagram shows the result of the cross.

Now since the Cp gene is displaced by the Ch in the male it was expected that all the males would be of the double sword variety. That was the theory. What Al Klee found in fact was that the males were deltatails; the Cp gene had 'crossed over'!

This set me thinking because the tearing of the fin reminds one of the double sword shape. Was splitting caused when certain genes for 'swordness' attached themselves to the delta genes?

At this stage I might add that breeding fancy guppies

is rather like eating nuts, once started it is very difficult to stop, so, keen to pursue this theory we took a male guppy displaying very bad sword-like protuberances (XCh YDs) and crossed it this time with a pigmented

Outline of the deltatail guppy, a variety particularly liable to show splitting of the tail fin

female, XCp XCo. (All of the many colour patterns of the guppy have been given names; one is the coccineus, abbreviated to Co, derived from the Latin word meaning scarlet, as in cochineal.)

		Ova from the female	
		XCp	XCo
Sperm from the male	XCh	XCh XCp	XCh XCo
	YDs	YDs XCp	YDs XCo

YDs XCp, Delta male; YDs XCo, split-finned male.

Here then seemed the answer; this cross gave us both good deltas (YDs XCp) and fish carrying the double sword and coccineus (Co) genes that later split their fins when 7 months old.

The conclusion to draw from this is never to breed with any fish that tear their caudal fins; it also explains why at times breeders have complained that not all the brood tend to split, but just a few, the remainder growing into apparently good broadtails. Splitting occurs when the Co is accompanied by the Ds gene and explains why the females never suffer.

From these facts the reader must not discount environmental factors. Though heredity seems the prime cause of fin splitting we must not overlook the fact that fish kept in dirty conditions and fed on a poor, unbalanced diet won't be helped; though secondary, these factors still have an effect. Once the fin tears then the resultant rupture is wide open to the effects of organisms present in the tank, particularly those of *Saprolegnia*, fungus types.

Should you experience splitting and want to keep the fish for showing purposes only, place the affected fish in old water, the greener the better; this we have found encourages the healing processes. Any proprietary anti-fungus cure can be applied directly to the tear.

References

Klee, Albert J. *Genetics of the Deltatail Guppy*, Aquarium Magazine, U.S.A.

Dzwillo. *Genetische Untersuchungen an domestizierten Stammen von Lebistes reticulata*, Mitt. Hamb. Zool. Mus. u. Inst., 57, 143-186, 1959.

Winge. Comp. rend. trav. Carlsberg, 21 : 1, 1934.

Standards Handbook, Fancy Guppy Association, April 1966.

personal comment

by ARPEE

THE recent fascinating correspondence in PETFISH MONTHLY on white spot has been most stimulating, and I heartily agree with the opinions expressed in the August issue that research into this scourge is a desirable thing. I must aver, all the same, that many who support this opinion might find themselves less sensitive on the subject if they had taken some of the simple precautions against the disease which have been ably and amply expressed elsewhere. At a guess I would say that over half of the cases of white spot occur where fishkeepers ignore the quarantine rule whenever fish have been subjected to chilling, or where plants or similar objects are introduced from a source not positively known to be 'clean'. The puzzle seems to be to know whether a source is clean or not in the absence of visible signs of the disease on fish.

The most puzzling case of the disease I have encountered was an outbreak, two years ago, in a pool in my garden in which I was rearing a hundred or so shubunkin fry, all of 1 inch or more in length. No fish had ever been in the water before I introduced the fry shortly after they hatched. No fish survived. The only suggestion I can offer, short of the organism having been bird-carried (yet we never see any water birds here), is that there were dangerous extremes of temperature in the pond water. The pond was a makeshift one, constructed with PVC sheeting, and there were a number of largish but very shallow (1 inch deep) inlets, in which the young fish would bask in the heat of the sun. I wonder whether sudden descents into much colder water below might have brought about that condition in those fish whereat they prove most vulnerable?

I have a very nasty feeling that this White Spot story is about as uncomplicated as that of the common cold, though all in all the aquarist is probably at an advantage, since if he does what he is told he can at least keep his charges clear of white spot. If any reader has cured a cold consistently to any formula, I am sure that the scientists will welcome a postcard.

At one time it was considered not quite the thing to put more than an inch of sand or gravel into a tank when setting it up, and certainly anyone seen to have 3 inch hillocks of the stuff was warned that decay and pollution would soon set in in a big way unless immediate steps were taken to reduce the contours to a thin sameness. Since such caution dies hard it is as well to remind the beginner that the contours are not critical, provided that the other conditions are 'right', i.e. that the fish are not overcrowded and that overfeeding does not occur.

A few authorities are still unhappy about putting any subsoil beneath the sand or gravel in your tank, but there is no possible doubt about the efficacy of half an inch of peat or peat-based aquarium compost if strong and healthy plant growth is desired. Clay pellets, dried first, and then pushed into the sand alongside specimen plants, also seem to pay off, though if you have any Malayan snails you will find that they bring them up to the surface if you don't break the balls into fragments by poking a planting stick around the general area, having first allowed the water to soften them.

I am just slightly suspicious about plant growth chemicals, and so long as I can maintain satisfactory growth by using conventional methods, I shall keep off them, at least if there are fish in the same tank. I shall certainly experiment with them in a spare tank one day, and if in the doing I persuade a single new leaf from my costly *Anubias*, I shall probably order a gallon of it and no doubt make a fortune.

I cannot remember reading a book on aquarium-keeping which does not, somewhere, condemn the goldfish bowl as the most unsuitable of all homes for a goldfish or some other luckless underwater creature. This counsel has been uttered incessantly since the first quarter of the century, when I first started keeping fish, but the miserable things seem to be as deeply entrenched now as ever they were when ignorance could be more readily excused than in these enlightened days. May I put it to the trade that this article is something they can liquidate if they make up their minds to practise what they so often preach. We, perhaps, in return, will buy those splendid little plastic tanks instead, which, even if they cost twice as much, can be cut in half and turned into two containers without very great ingenuity.

One of the abominable counter-ploys in the goldfish bowl controversy is the assertion by the pro-bowls that the inmates are often so healthy. It is absolutely true that bowl-dwellers frequently look a picture of well-being and that they live for years, whilst the fish in a 'properly' set up aquarium expire swiftly in a welter of green confusion and horror. The explanation seems to be that the water in the bowl is changed regularly, which means that pollution never has a chance, and that the inmates have a long, dull and antiseptic life. The fish in a properly regulated tank certainly are at risk if their owner lets things go, but if, at the very worst, they do succumb rather sooner than planned, at least they have likely had a merry life before the final catastrophe.

If the pro-bowl does get converted to the tank concept, I think he should go over gradually; first, buy the tank, and then just try fish and water in it; then try some gravel on the bottom, and after a few weeks of this, add some plants. Finally, after a month or so, attempt a scientifically constituted affair, having first read up the subject. A sudden conversion, without the background knowledge and understanding of the relevant factors, is potentially as evil as the goldfish bowl itself. Which, when you come to think of it, is possibly why so many dealers stock them.

Expanded polystyrene sheeting is so cheap these days that it is well worth buying a roll of it for insulating your tanks. If your aquaria are on stands it is particularly worth putting a layer under the tank, and the background can often be made with the same material. It can be painted with plastic emulsion paint—and I think a more satisfactory effect is achieved this way, since the white marbled backing it otherwise gives looks pretty unnatural. Panels may also be cut to fit the end and front glasses of your tanks, to conserve heat during the colder weather, and to act as a form of insurance against power cuts. For this latter purpose it will be found that the thicker form of polystyrene tile will prove more satisfactory than the sheeting. When sticking it to other substances, always use the recommended water adhesive, as a number of otherwise very effective adhesives used for other purposes cause it to disintegrate. I found this out by hard experience, and felt an utter fool!

Low-voltage Electricity for Control of Pests

IN the answer to a reader's query about control of hydra in an aquarium (PETFISH MONTHLY, September) an invitation was given to readers to comment on their experiences with the use of low-voltage electricity to kill these animals. Several reports have been received (one letter is printed on the Letters page this month) and other aquarists have mentioned in conversations not only that they have had success with the method but also that it can have the additional application of being used to kill unwanted water snails.

In a recent issue of the U.S.A. magazine AQUARIUM ILLUSTRATED one of its associate editors, Don Cook, has also described his findings on the use of the method in tanks that contained small tropical fishes. The equipment he used was a 6 volt battery, connected by plastic-covered wires to two copper plates, each 1 inch square. The copper 'electrodes' were placed halfway down the depth of a 20 gallons aquarium containing hydra and young angel fish, one electrode being positioned at one end and the other one at the farther end. This arrangement killed all the hydra and did not harm the fish when left in position for 4½ hours. Later a period of 3 hours was found to be all that is required, and with this period in smaller tanks (10 gallons) success was also obtained

Continued overpage

FOR THE COMMUNITY AQUARIUM

The Penguin Fish

Photo: BURKARD KAHL

THE very name of the penguin fish is enough to make one want to see it, and once looked at, particularly if seen in a group, its claim to a place in the community tank is established.

First to strike the eye is the bold black band extending from the gill-cover edge right along the body and down into the bottom lobe of the tail fin. This band is edged with narrow golden lines. The general silver of the body, overcast with a brass-yellow sheen, is darker above the black band than below it. The fins, apart from the lower lobe of the caudal and the first few rays of the anal, are clear and colourless.

A peculiarity of this Brazilian fish when it is not actually swimming forward is the tail-down, head-up position that it assumes. The periodic flicking movement by which the sinking tail end is suddenly restored to the near-horizontal level during such rest periods is another quite attractive characteristic of the penguin fish. It does not grow to more than about 3 inches in overall length so that the penguin does not embarrass its owner by over-reaching suitable community tank size.

As this is a shoaling species their characteristics are seen best and the greatest effect in the community tank is given by a group of at least three or four. The specimens you buy from the dealer will almost certainly not be sexable, for it is only with maturity that the females show up by a deepening of the belly region; they tend to be rather longer than the males of the same batch. When sexes do become apparent in this way it will be possible for you to remove obvious pairs from the community tank for breeding in a tank 18 in. or 24 in. by 12 in. by 12 in., but the penguin is not a ready spawner.

The general community tank temperature of 75°F (24°C) or that region will suit the penguins, which are not fussy fish in any way. They very soon settle in when brought home to a planted tank and are well in evidence in the middle levels of the water, showing great excitement at feeding time. Dried foods of medium size are taken as the particles descend through the water. Water fleas are eaten with avidity and tubifex worms (preferably chopped) and white worms are accepted.

Although several similar but different fishes have been offered under the name penguin, these are all of the genus *Thayeria* and are most commonly sold as *Thayeria obliqua*.

Control of Pests

Continued from page 245

in the presence of fighting fish youngsters without effect on the fish.

However, guppies, swordtails and mollies were found to react badly to the procedure if it lasted more than an hour. Control of hydra was still possible even with this shorter time of treatment but it had to be repeated at intervals every time fresh hydra were seen. In tests with clown loaches, adult angels, *Corydoras aeneus*, kissing gouramies and blue gouramies these were all found to be unaffected by the full 3 hours' treatment.

Water snails were affected by the 3 hours' treatment but were not killed in this time. Longer periods of treatment (up to 12 hours) that killed all the snails also killed some fishes, and since the water showed a greenish tinge of colour after this period it would seem that copper salts from the electrodes are formed in the water in poisonous quantities after prolonged electrolysis. Mr Cook asks what the results might be if the electrodes were of stainless steel rather than copper, and suggests that there is scope for further experiments with the uses of low-voltage electricity in aquaria.

A New Look at White Spot

An explanation of the unexpected outbreaks of white spot disease that have been reported after chilling of fish, their transfer to new aquaria and subjection to other 'stress factors'

By G. BUTCHER, B.V.Sc., M.R.C.V.S.

WHITE spot is caused by a protozoan parasite belonging to the order Holotricha. Its scientific name is *Ichthyophthirius multifiliis*. The disease is ubiquitous, being found in rivers and ponds of all continents as well as aquaria. Reports show that it occasionally infects marine aquaria. The cost of the disease in America is said to exceed 1,000,000 dollars each year.

Recent correspondence in PETFISH MONTHLY has shown that there is great confusion concerning the epidemiology of white spot, due to the apparently strange behaviour shown in its appearances in aquaria. This article is written in an attempt to demonstrate that there is a rational explanation for these occurrences.

White spot in its natural form lives innocuously in the epidermis (skin) of fish, causing little or no tissue reactions and therefore no visible white spots.

Known Life of the Parasite

The reproductive cycle starts when the organism drops away from the fish host, settles to the bottom of the tank, lake or river, and forms a clear cyst membrane round itself. Inside the cyst repeated cell division occurs until from 250 to 1000 young ciliates are formed. These leave the cyst and become free-swimming at the earliest in 7 hours when conditions are most favourable, although it may take up to 3 days under adverse conditions. The ciliates are spherical balls 0·5–1 millimetre in diameter and just visible to the naked eye. They are completely covered with cilia, short hairs which by waving in a rhythmical fashion enable the cell to progress in a rolling, tumbling fashion. There is a small cytostome or mouth opening, but the ciliate cannot feed when free and must therefore make contact with the skin of a susceptible fish within 48 hours or perish.

When the ciliate touches a fish it uses the cytostome and a rotating motion to burrow between the cells of the epidermis. Here it gains nourishment from the skin tissues and fluids and causes the body defence mechanism of the fish to react and form the white papules so typical of the disease. Infection may be so extensive as to kill the fish; the most important organs are the gills, where any number of parasites cause interference not only with respiration but also disturbance of the osmo-regulating cells found in the gills. Tissue reaction in the gills rarely causes white spots, rather a mass of granulation tissue (proud flesh) which can lead to the gill filaments becoming joined together (adhesions).

In the clinical disease the parasite grows to maturity in 1 to 3 weeks and can then be released to restart the cycle.

There are no reports of a sexual stage of reproduction and it is not thought that there is any formation of resting, resistant or spore-type forms away from the fish.

This is all reasonably documented fact. Differences of opinion about the next statements on immunity will undoubtedly arise. American authors are more favourably inclined to the Premunity-Commensal Theory than Europeans. I am basing this explanation on premunity, however, as it seems to give a rational explanation of clinical outbreaks of white spot, as well as having many proved parallels in protozoan diseases of other animals.

'Premunity' and White Spot

White spot is a commensal organism. This means that it lives normally in the skin of many fish without outward signs. There are many strains of the parasite, and some authors have thought that these were sub-species. It is now believed that these are in fact only strains of varying virulence. The presence of white spot as a commensal produces immunity in the fish. This is scientifically called premunity, and it is wholly dependent on the live presence of the organism in the skin.

This premunity is not a complete immunity and can fairly easily be overcome by a massive challenge of infection. This is helped by rapid changes in the environment of the fish. Most important are a fall in temperature or a change of tank. These changes are called 'stress factors'. The relationship of the fish host to the parasite is a finely balanced affair in Nature. No parasite can be called successful if it destroys all its hosts. In the aquarium the balance is always precarious. Fish weakened by stress factors lose this balance, and by triggering the release of the parasite from the skin cause the eventual liberation of large numbers of ciliates. In turn, this can overcome the premunity of other occupants of the tank.

Many tanks are therefore balanced when kept as a

closed community. Introduction of new fish, however, is always dangerous. If non-immune, the new fish will be open to infection from the tank, being subjected to stress by change of tank. This infected fish may then upset the balance and cause disease in the other occupants. Conversely, a fish bearing parasites as commensals may be added to an uninfected tank. The stress of change can then cause disease to develop in the introduced fish and subsequent infection of the rest of the tank.

If white spot shows in 3 or 4 days in newly introduced fish, as is most often the case, the disease must have been on that fish, as it has already been stated that it takes at least 1 week for white spots to develop. One of the strongest arguments for the commensal theory is just this fact. That so many imported batches of fish do show disease in 3–4 days shows that the infection came in with them. It is inconceivable however, that foreign breeders are deliberately exporting infected fish. They are successful breeders for precisely the same reasons that they do not have white spot in their tanks. In other words their conditions are very good and host-parasite balance is achieved without frequent clinical disease.

Species Variation

It is well known that different species of fish vary in susceptibility. Small-scaled species and characins seem more likely to be affected, as do fish that swim in mid-water rather than bottom-feeders. Other factors could be inability to be immunised by infection, lack of anti-septic mucus on the skin and also that some fish are just not adapted to the environment provided in aquaria, and are therefore always on the borderline of ill-health. It should be possible to breed strains of fish with increased resistance, but the practical problems would seem too big a task as it would have to be done for all the many species of fish independently.

The first principle of treatment must be the restoration and provision of a stable, healthy environment and therefore a balanced host-parasite relationship. White spot has never caused severe epizootics in natural waters, where only suitably adapted fish species live in balance with the parasite because of natural selection. Dilution of the free-swimming parasite is also great. In comparison, it must be very simple for the parasite to contact a fish in the confines of a comparatively overcrowded aquarium.

It is essential that importers and dealers quarantine fish and plants for quite long periods. By providing a good stable environment they allow the natural balance to re-establish. Private aquarists must accept the fact that they will inevitably have trouble at some time or other after purchasing fish even from the most reliable dealer. A quarantine tank is therefore the best defence against this and also many other diseases.

Treatment of the Disease

Basically, treatment is simple. The temperature should be raised to 85°F (27°C). This hastens maturation of the cysts and also helps the fish to stabilise their premunity in relation to the parasite. This should always be the first treatment. Only if it is unsuccessful should drugs be tried. No safe drug exists that will kill the parasite encysted in the skin of fish. Many drugs are available to kill the free-swimming ciliates. They include quinine salts, chloramine, methylene blue, malachite green, common salt baths and formalin baths. Proprietary remedies are usually mixtures of these drugs and have the advantage of ease of availability and simplicity in dosage by following the dosage schedule on the label. Antibiotics can be of use in badly affected fish, which should be isolated. They are used only in combination with the anti-protozoal drugs. They help to reduce secondary bacterial infection of tissues damaged by the parasites.

It is said that chloramine is effective because of the production of nascent oxygen which kills the ciliate. It would therefore be interesting to hear if anyone had used ozone to do the same. If effective this would be preferable to the use of drugs, which are all to some extent dangerous to fish and plants. Similarly, an even more attractive proposition for large establishments would be the irradiation of circulating tank water with ultraviolet light. Speed of water flow and intensity of irradiation would, of course, be critical, but at least in theory this should be effective in killing the ciliates.

Pond Hunting

A Simple Guide to Freshwater Invertebrates by David C. Bowler, B.Sc. 28 pages, line drawings. A British Ichthyological Society publication. 2s 6d (from D. Marlborough, 98 Stoneyfield Lane, Edgware, Middlesex, postage 6d).

THERE must be quite a proportion of the population who spent time this summer enjoying the peace of the countryside from the banks of some river or pond idly wondering what some curious shape in the water could be. Those of us who are concerned mostly with only one of the inhabitants, the fishes, of these waters have little knowledge of the rest of the teeming life present there. So this little booklet, although clearly stating that it is for beginners only, should find a very wide readership.

The first part deals with the simple identification of the animals found, under main headings 'Soft-bodied types' and 'Animals with a hard covering to their body', with illustrations of each type. Next comes a section on the factors that may affect the position of invertebrates in the river or pond. Finally come pages of line drawings of the pond animals classified.

The drawings are many and excellent and the booklet more than fulfils its aim to enable the average angler or non-specialist to identify quickly the freshwater animals that he may come across, for example, in his excursions to obtain live food for his fishes. Having identified them, however, it is quite certain that the reader would be interested in a few succinct remarks about their life cycle and habits. A companion booklet is an urgent requirement here.

L.H.

Your Fish Can't Shop for Themselves

. . . . so what do you look for in a fish food?

By T. ROLAN

HOW do you decide which food you buy for your fish? A quick check on the dealers' shelves will show you that at the present time there are being marketed more than a dozen different brands of dried fish foods, most having several separate specialist mixes under the brand name. The days when one walked into a shop and asked merely for 'a packet of fish food please' are obviously over, but which food to buy is now the problem. Do you choose by price, by the appearance of the pack, by the claims in the advertisements, by your dealer's recommendation, or do you make some trials to assess for yourself the relative merits of the various foods?

A single food is unlikely to meet fully all the needs of a collection of different kinds of fishes in any case, but most people seem to have one food for 'general' every day use. For choosing such a food I suppose a useful approach would be: what's in it, what size are its particles, how much do I get for my money and do the majority of my fish like it?

Yes, I put the choice of the fish last and for two reasons. One is that a good many fishes that have been taking one kind of food are likely to act as if you've suddenly put powdered coke in their tank when you try a new food on them, so that one has always to allow time for their old feeding habit pattern to be broken. Secondly, there are substances that will cause fishes to act like crazy things when they get a smell or taste of them, and it seems likely that even if these non-nutritious fish-attracting compounds were mixed with sawdust one would still get the impression from the first responses of the fish that you were giving them something delicious. This is not, of course, a suggestion that any manufacturers would deliberately add substances without food value but only to point out that the feeding responses of fish need to be observed with care to see whether they are consuming or only sampling and spitting out!

'Are you sure you haven't been overfeeding them?'

What's in It?

The amount of information given on a food packet about the brand's constituents varies from make to make. Some present a detailed itemised list of ingredients, others only a summarised percentage analysis of protein, fat, carbohydrate, 'fibre' and mineral content. Some makes give both, some give no information at all or only general statements about their product's 'balanced' nature.

In six foods looked at, for which analyses were stated, percentages for protein ranged from 36 to 46%, for fats from 2 to 5%. With the ingredients most commonly used in fish foods around 40% appears to be the maximum proportion of protein obtainable. Many makes appear coy about stating carbohydrate content, probably because in the bad old biscuit-meal fish-food days the foods were carbohydrate and nothing else and warnings were sounded by writers about the danger of feeding with such water-fouling and fattening foods. Carbohydrates in the correct amounts are the energy-providers, so there is every reason for them to be present. Although some packs quote a water content it seems unlikely that this could be a source of 'make-weight' since any significant moisture would rapidly encourage mould formation.

'Vitamins' are often mentioned as being present, but not usually named, and some makers claim to include 'hormones' (again without naming them), but these

additives, even if present, would not favourably sway my personal choice of a food for my fish.

Size and Amount

Foods having fine particles are of little use if the fish they are intended for have big mouths and appetites. If the food's particles are large they should not be so dense that they sink in the water too rapidly or they may be left uneaten on the bottom. Flake foods have a lot to be said for them in these considerations, for they seem to be 'nibble-able' by the smallest fishes and yet are accepted by larger ones too.

Now that weights of contents are being stated on fish food containers, it is possible for the buyer (I won't say the consumer in this instance!) to see how much his money gets. Six brands selected at random have been compared and their prices for containers of food with weights in the range ½ ounce to 1 ounce computed on a common weight basis: prices per ounce ranged from 1s to nearly 4s 6d, but although I would not have selected the cheapest of the six on this basis I would certainly have excluded the dearest on the grounds of its being over-priced.

It is also well worth working out the cost per ounce of your selected food in terms of quantity bought if a range of sizes of pack is offered, for provided the amount used justifies the purchase of a large pack this can save quite a bit on the food bills.

I find that in the writing on their packs makers give me quite a lot of food for thought about their product, if not a lot of food for my fish, but it's nice to be able to select with reason and with facts to guide rather than to buy because the colour of the tin appeals.

Formation of an Aquarium Society: 2

Constitutional Aspects and the Rule Book

By G. H. JENNINGS

(Hampstead Aquarist Society)

ONCE the founding stages of the society have been instigated, the constitution of the society will have to be thought about, with special consideration of the production of a rule book outlining the constitution for the benefit of the members. This is probably best dealt with either by duplicating a small pamphlet, or having a rules card or membership and rules card printed.

Rule books are usually, though not always, divided into two sections—the first dealing with the general rules of the society, the second dealing with rules appertaining to shows and the showing of fish. As the final decision on whether any particular rule is necessary or not lies solely with the society concerned, I can only give a guide to those I think may be advantageous or desirable. The best way of doing this I think is to list the rules found in an average society catering for aquarists. This list can, however, only be used as a basis, and for this reason I have appended notes where these may be of help.

Rules

1. **The annual general meeting of the "NEW" aquarist society shall be held in the month of (name) each year, at which meeting:**
(a) The committee shall be elected. The committee shall consist of the following members (see Part 1, PETFISH MONTHLY, October): chairman, vice-chairman, treasurer, secretary, show secretary, public relations officer, assistant secretary, assistant show secretary and one other member. (b) The accounts shall be presented. The treasurer shall produce a statement of the accounts of the society for the previous year, which shall be audited by two elected auditors (non-committee). (*Note:* Accounts may be audited by chartered accountants if the society is large enough to warrant the expense.) (c) The reports of the committee members for the previous year shall be read. The minutes of the last annual general meeting shall be read, and signed as correct by the chairman.

2. **All fully paid-up members shall enjoy full and equal voting rights.**

3. **The terms of office for committee members shall be as follows:** Chairman: 2 years for the first term followed by further periods of 3 years. Vice-chairman: 1 year for the first term followed by further periods of 2 years. Secretary: 2 years. Assistant secretary: 1 year, followed by further periods of 2 years. Treasurer and show secretary: 2 years each. Public relations officer, assistant show secretary and one other member: 1 year each. (*Note:* Spacing the terms of office in this manner ensures that all the officers cannot be replaced in one election, as this could leave the society without knowledgeable organisers.)

4. **The rules can only be altered or amended by a majority vote of the fully paid-up members present.**

5. **All applications for membership shall be endorsed by any one existing member** and shall be accompanied by the annual membership fee, which is payable one year in advance and due on (date) each year. (*Note:* Monthly

Continued on opposite page

A Hair Grass with a Difference

By C. D. ROE

VERY popular with many aquarists is the well-known 'hair grass' (*Eleocharis acicularis*), which is so valuable for coldwater or tropical aquarium decoration. But there is another plant of this genus having hair-like stems which is less well known although equally decorative and perhaps more graceful in the aquarium. This is *Eleocharis vivipara*, and when its growth runs riot its masses of stems provide an excellent refuge for fish fry.

The thin stems grow to about 10 inches in height and end in terminal buds; these produce small plantlets, which in turn produce terminal buds bearing yet smaller plantlets, the growth giving the impression of perpetual viviparous reproduction. In shallow water under shaded conditions in a greenhouse a solid mass of the plants will form in the water with a developing mass of younger plants projecting above the surface. Good, but not rich, loam is an excellent planting medium for *E. vivipara*, which can be grown out of water in wet conditions and transferred in clumps to aquaria.

Small plantlets are produced at the upper ends of the stems of *Eleocharis vivipara*, the growth of which forms attractive tangled masses ideal for fry cover

This *Eleocharis* comes from the north American continent, where it is indigenous to north and south Carolina, Georgia and Florida. It is not the only plant in this genus sharing this 'viviparous' type of growth but it is one that has proved its worth for aquarium purposes.

Suggested Rules for an Aquarium Society

Continued from page 250

payments or payments for part of one year would have to be arranged on a *pro rata* basis. Because of rising postage and stationery costs, together with the fact that money for shows, judges and lecturers will have to be found, a membership fee of not less than 20s per person is recommended.)

6. **At least 14 days' notice shall be given of any annual general meeting or Extraordinary general meeting.**

Show rules

1. **All entries shall be benched at owners' risk and must have been the property of the exhibitor for at least 28 days beforehand.** (*Note:* The 28 day-ownership rule is standard practice among societies for many reasons, and difficulties may occur at inter-club shows if this rule is not strictly adhered to.)

2. **An entry fee of (sum) per fish shall be charged at club table shows.** (*Note:* The funds from this surcharge will help to meet costs of award cards, plaques etc.)

3. **The judges' decision shall be final. All fishes will be judged in accordance with Federation standards.** (*Note:* Depending on the judges and the area the society is in, this may be any of several Federations, addresses of which will be given in the next article.)

4. **Classes will be amalgamated or divided if the number of entries warrant this.**

These rules are, of course, incomplete, but it is hoped that they may provide a basis for discussion upon which new societies could base their own rule book.

(*Club meetings, shows, inter-club meetings and affiliation to the federations will be discussed in a further instalment*)

BREEDER'S NOTEBOOK

Breeding the Pigmy Rasbora

(Rasbora maculata)

By J. LEE

I FIRST purchased, and indeed saw for the first time, these beautiful little gems, which were in good condition and deep colour, at a big pet shop in London while on holiday there. After I had stood in front of the tank studying them for a good hour, watching their behaviour, I was convinced which eight I was going to buy, although I was having difficulty in sexing them as they had not reached maturity (for these fish full maturity is about 1¼ in. and mine were only about half that).

The eight I bought I divided between two tanks: four in one tank that I thought were males (distinguished by the spots on the body and colour) and the other four in the other tank as females. The water in both tanks was a mixture of half filtered rainwater and half aged tap water. To both tanks was added a small amount of rock sea salt and a thin layer of boiled dark peat at the bottom. As the tanks were 20 in. by 10 in. by 10 in. I decided to darken the top a little with a nice bunch of hornwort and bladderwort.

For the next four or five winter months I got to work conditioning them on a staple diet of fine sifted *Daphnia*, Grindal worms, chopped *Tubifex* and, as the ghost larvae (glass worms) were quite big I also chopped a little of this as a stand-in now and again with some very small thin earthworms I had noticed in my white worm cultures. These were also chopped and grated so that the fish could take them without fear of being choked. As the months went by, the rasboras were growing quite well on this diet.

As we had some warm spring weather early that April, I transferred the four males into the tank with the females to see whether they could be sexed. For the next few weeks there was quite a mixed chase between them and as I watched very carefully I noticed one pair were side by side quite a lot, so being confident these were the pair out of the eight, I took them out.

After a good look round I decided on a very shallow tank which I had, with a ½ in. angle iron, size 22 in. by 6 in. by 8 in. Not having any black paint at the time I wrapped some black plastic sheeting round the ends and sides and darkened the bottom with some well-washed fine charcoal. As I needed soft, slightly acid water for these fish, I added 3 parts of filtered rainwater and 1 part of aged tapwater, bringing the depth up to about 5½ in. (about ½ in. from the top of the angle iron). Then I added to the tank a handful of large flake pieces of boiled peat to turn the water slightly acid. After a couple of weeks or so, I decided to test the pH values and temperature. The pH was 5·3–5·7 (a good quality water for rasboras) and the water was gin-clear. The temperature fluctuated between 77°F and 82°F (25–28°C).

Spawning Coloration

I placed the breeding pair in at dusk. For spawning medium I used a mixed ball of stringy green algae and the very fine fern (*Fontinalis*) which grows on rocks, already disinfected in a solution of diluted Dettol and rinsed very carefully. I then placed the tank right opposite the fishhouse door with the addition of 1 teaspoon of sea salt and half a teaspoonful of Blackwater Tonic at this stage. When I retired for the night, the temperature was nearly 80°F (27°C) and the fish had settled down behind the thickets out of sight. Next morning was Sunday and I was up bright and early. I left the fishhouse door slightly ajar, letting a fine beam of sun in which just caught the glass a little. After breakfast I noticed that the pair of fish were beginning to spawn. When I peered into the tank the male had turned into a gorgeous crimson gem. I noticed that near the base of the tail the red seemed to glow like a crimson light—one of the most beautiful sights I've ever seen for such a small fish.

As the fish were still chasing vigorously I left them to it. About midday I looked in the tank, and as things seemed quiet I removed the breeders. Although I could not see any eggs, I knew they had spawned—the female was quite slim. So without any hesitation I covered the tank on the top and down the front with thick brown paper, cutting out all the light, then added 7 to 9 drops of acriflavine.

The young hatch in about 24 to 30 hours. They then hang from the plants till they are free-swimming after 3 to 5 days. Although the fry are very tiny, they grow quite rapidly provided that they are fed on rotifers and nauplii, then later larger nauplii and small *Cyclops* and *Daphnia*.

For the record, these little fish exhibit one of the most exciting spawning behaviours to be seen.

Club News

MEMBERS of the recently reformed **NORTH OF SCOTLAND A.S.** are most fortunate in the venue for their meetings. These are held on the first Tuesday of every month in the Lecture Hall of Aberdeen's new Zoo and new members will be made most welcome. At the first meeting of the 1966-67 winter session, members were very pleased to welcome back the honorary president, Mr George Leslie, only recently recovered from a severe illness. At this meeting, after a general discussion was held to decide the future policy of the club, members adjourned to the aquaria section of the Zoo to carry out any necessary work on the tanks that they had donated to the Zoo and stocked themselves. The limited variety of fishes at present available would shortly be expanded thanks to the North of Scotland Zoological Society's generous offer to provide funds for the purchase of much rarer varieties.

WHEN the **ASSOCIATION OF YORKSHIRE AQUARIST SOCIETIES** held its quarterly meeting at the end of August, the chairman, Mr D. Carr (Bradford), welcomed delegates from the Bradford, Dewsbury, Halton, Hull, Mixenden, Rowntree (York), Sheffield, Skipton, Swillington, Wakefield and York societies. A special greeting was extended to the delegates from the York & D. A.S. as this society has re-joined the Association and the secretary informed the meeting that there were now only six societies within the Yorkshire boundaries that remained outside the fellowship of the A.Y.A.S. Secretaries of these societies had received letters inviting them to join the Association and he hoped for favourable replies.

It was agreed that the A.Y.A.S. 1967 Open Show should be sponsored by the Hull A.S. and held in Hull on (subject to confirmation) the first Sunday in May. The proposal that the Association formulate a set of rules that all member societies should accept, operate and adhere to at individual society shows caused lively discussion but it was not accepted and it was agreed that show rules must remain the responsibility of each individual society. It was also unanimously agreed that the show rules of any society as published in its schedule should be clear and concise and strictly applied and adhered to since absolute observance of such rules by both organisers and exhibitors would eradicate difficult 'incidents' that otherwise cropped up.

The chairman thanked all the societies for their suggestions concerning A.Y.A.S. trophies; that from the Bradford A.S. that the standard trophy be an oblong polished wooden plaque (6½ in. by 4½ in.) with a suitably inscribed chrome centrepiece was accepted. Mr Winterburn's (Bradford) suggestion, that at society shows the class awards should be announced or written up in some way as and when the results became available from the judges as such prompt publication of class winners would be greatly appreciated by all exhibitors, was supported. The next quarterly meeting of the A.Y.A.S. will be held on Saturday, 19th November at 3.0 p.m. in the Church Institute, Albion Place, Leeds.

TROPICAL AQUARIUM BREEDERS *are congratulating themselves upon Mr Jim Kelly's acceptance of the presidency of their society. They have a new chairman to welcome, too, in Mr Brian Pawley, who has replaced Mr Clifford Walker, to whom all members express their great appreciation for his wholehearted services in the past.*

AT the annual general meeting of the **FREELANCE A.S.** Mr A. E. Russell was re-elected chairman; Mr R. A. Thomas replaced Mr B. Prior as treasurer and Mr Thomas is himself replaced as secretary by Mr J. E. Howat, 36 Vicars Hill, Lewisham, S.E. 13.

HAMPSTEAD A.S. has been reconstituted. Its full name is now the **HAMPSTEAD & DISTRICT AQUARIST'S SOCIETY** (LONDON BOROUGH OF CAMDEN) to cover the amalgamation of Hampstead into the London borough of Camden. At its first annual general meeting on the 20th September, Mr K. J. A. Pye (35 Steeles Road, London, N.W.3) was elected chairman-secretary; Mr R. Gardner, treasurer; assistant secretary, Mr T. Hall; minutes secretary, Miss P. Blackwood; show organiser, Mr G. Jennings.

MERSEYSIDE A.S. report that the idea of handing out at the Liverpool Show special edition News Letters explaining the work and object of aquarist societies and suggesting that the reader should attend a club meeting has proved very successful. Seven new members were welcomed to meetings during September. Although they may have missed the highlight of the club's year—the very successful Liverpool Show in July—there are plenty of varied club activities to take part in: lectures (including one by the chairman, Mr Fred Mulla, on 'The Small Fish House'), table shows, an auction and the showing of a 16 mm. sound film in Eastmancolour of the River Usk and the life in and around its waters. Merseyside members also are frequently named in the award lists of surrounding shows. At the Gorton & Openshaw open show, Mr Ken Parkes achieved a first and the best fish in show in the large barb class, firsts in the large cichlids and in the loaches classes, a second in the loaches (pairs) and a second in the medium characins. Mr R. Moorcroft took a first (swordtails) and a third (danios, pairs). Mr John Robinson took a first (top minnows, pairs), a third (small characins) and a third (rasboras). Meetings are held on alternate Mondays at Montrose Athletic and Social Club, 5 Richmond Terrace, Liverpool 6, when new members will be most cordially welcomed. The secretary is Mr Robert Moorcroft, 24 Frankby Road, Liverpool 4.

MR A. W. Spencer of Witherley, Nr Atherstone writes with pride of his friends Mr and Mrs E. Pearson. They were due to judge the **TAMWORTH A.S.** *club show on 17th September but were involved in a motorcycle accident a couple of days beforehand. Both were detained in hospital but Mrs Pearson travelled over 20 miles as soon as she was able to leave the hospital next day to judge the show so that club members would not be disappointed.*

Entries Up at Newport's Show

THE fourth Annual Open Show and Exhibition of tropical, coldwater and marine fish and furnished aquaria of the **NEWPORT A.S.** was held on 17th September at Newport. The show was a great success, having a record number of entries and well over 30 more than last year. Members of aquarist societies from all over the west of England and South Wales attended, some from as far as Swindon and London. Judges were Mr Ferrant, Mr Johns, Mr Songhurst and Mr Wigg of the South Wales Tropical Fish Study Group. Prizes were presented by Mr Roy Hughes, M.P. for Newport, and notable among the many prize-winners was Mr F. Brown of Bristol, who obtained the highest aggregate points in the show. Mr Fitzgerald and Mr Glyn James were close runners-up. Results were:

Siamese fighting fish: 1, Mr F. Brown; 2, Mr A. Williams; 3, Mr J. Wheeler. Anabantids: 1, Mr T. Fitzgerald (dwarf gourami, 88½ pts); 2, Mr C. Pearce; 3, Mr Ralph Harris. Barbs: 1, Mr F. Brown (chequer barb, 91 pts); 2, Mr F. Brown; 3, Mr R. Harris; 4, Mr C. Cass. *Hemigrammus* and *Hyphessobryconi*: 1, Mr J. Burgwin; 2 and 3, Mr R. Harris; 4, Mr J. Wheeler. A.o.v. characin: 1, Mr J. Burgwin; 2, Mr Clarke; 3, Mr J. Burgwin; 4, Mr P. Tidball. Dwarf cichlids: 1 and 2, Mr Hudd; 3, Mr D. Fryer; 4, Mr Glyn James. A.o.v. cichlids: 1 and 3, Mr T. Fitzgerald; 2, Mr R. Harris; 4, Mr B. Light. *Corydoras*: 1, Mr T. Wall (84½ pts); 2 and 3, Mr Wheeler; 4, Mr P. Tidball. A.o.v. catfish: 1, Mr F. Brown (86 pts); 2, Mr T. Fitzgerald; 3, Mr Wheeler; 4, Miss P. Mostgen. Danios, rasboras, white cloud mountain minnows: 1, Mr F. Brown; 2, Mr C. Gibbons; 3, Mr F. Brown; 4, Mr M. Pemberton. A.o.v. egglayer: 1, Mr T. Fitzgerald; 2, Mr D. J. Hayter; 3, Mr J. O'Dwyer; 4, Mr S. Steer. Swordtails: 1 and 3, Mr T. Wall; 2 and 4, Mr F. Brown. Platys: 1 and 2, Mr Glyn James; 3, Mr J. Burgwin; 4, Mr R. Harris. Mollies: 1, Mr G. James; 2, Mr M. Barry; 3, Mr Wheeler; 4, Mr Barry. Guppies: 1 and 2, Mr Leo Bannerman; 3, Mr Wheeler; 4, Mr S. Steer. A.o.v. livebearers: 1, Mr M. Wheeler; 2, Mr G. H. Jennings. Breeders egglayers: 1, Mr O'Dwyer; 2, Mr F. Brown; 3, Mr R. Harris; 4, Mr R. Main. Breeders livebearers: 1 and 3, Mr Wheeler; 2, Mr G. James; 4, Mr F. Brown. A.v. aquarium plant: 1, Mr G. James; 2, Mr A. Payne; 3, Mr A. Pemberton. A.v. goldfish: 1 and 2, Mr C. Cass; 3, Mr B. Light; 4, Mr C. Pearce. A.o.v. coldwater fish: 1 and 3, Mr B. Light; 2, Mr Michael Parry; 4, Mr C. Pearce.

A.v. native marine fish: 1, Miss P. Blackwood; 2, 3 and 4, Mr G. H. Jennings. Junior a.v. egglayer: 1, N. John; 2, M. Pemberton; 3, D. Hodge; 4, N. John. Junior a.v. livebearer: 1, 2, 3 and 4, M. Pemberton. Furnished aquaria: 1, Mr G. James.

The F.B.A.S. Open Show trophy for the best marine exhibit in the show went to Miss P. Blackwood of the Marine Study Aquatic Society. The best tropical fish in the show was a chequer barb owned by Mr F. Brown of Bristol. The best coldwater fish in the show was a green tench owned by Mr B. Light of Barry A.S. The Colindale plant trophy, presented by the F.B.A.S., was won by Mr F. G. James of Newport. An address of thanks was given to Mr Michael Parry, show secretary of Newport, for his running of the show.

Photo R. BERESFORD

Jim Kelly (centre) presented the prizes at the Liverpool F.G.A. Show (report below). Mr Bill Armitage, section secretary, is at the extreme right

THE first open show of the LIVERPOOL Section of the **FANCY GUPPY ASSOCIATION** attracted an entry of nearly 100 and a very large attendance of visitors. Altogether quite a big success! The quality of the exhibits was of a very high standard and the judges, Mr J. Kelly, Mr Rigby and Mr Peat had a hard task placing the awards (only 2 points separated first, second and third awards in several of the classes). Members of the section are always delighted to see visitors at their shows (it was very gratifying that so many who travelled to this show came from long distances) and do work hard to try to make such visits worthwhile. The venue (the Norris Green Boys Club, Townsend Avenue) is well catered for by public transport; there is a car park available and every effort is made to provide first-class refreshments. All classes of fancy guppies are catered for and keen sporting competition is assured. Lectures and discussion also take place during the afternoon to provide visitors with further interest.

LEAMINGTON & D. A.S. report that at the first of the new session's meetings there were 57 fish entered in the table show, with 19 entries alone in the coldwater section. As well as being a record entry, it was interesting to find that the a.o.v. class was won by a green trigger owned by Mr D. Lucas, and that the coldwater class included a blenny entered by Mr R. W. Sharp. This is the first time that marine fish have appeared on the bench of Leamington.

AQUARISTS ON THE MOVE: *Now we hear that* **YORK & D. A.S.** *are to visit The Hague next Spring. Mr G. B. Hawksby, secretary of the society, reporting on his own recent visit to Holland in the club's monthly News Letter, states that he was told there were 23,000 fishkeepers registered in Dutch societies, almost all of which have a waiting list since clubs restrict membership numbers. However, such numbers are likely to be in the region of that, for instance, of the society in the Hague (the oldest society in Holland and founded in 1919)—230, of which 70 members regularly attend the monthly meetings!*

Good Teamwork at the Nottingham Open

(Left) General view of the show hall at Nottingham (Right) What do show secretaries talk about? Nottingham's show secretary Mr W. J. Christian in discussion with Mr G. W. Cooke (F.N.A.S. show secretary, centre) and Mr H. Lymn (Nottingham & D.A.S. president, left)

DESPITE what might have been a severe set-back to the arrangement of the third annual open show held in Nottingham by **NOTTINGHAM & D. A.S.** in September the display opened with only those in the know aware that collapse of a long section of benching had added hours to the work of members. With Mr W. J. Christian at the helm the show committee had everything under control by benching time. In its two days the Show received 1,700 visitors, who had plenty to look at. Two novel features of the Show this year were an additional class for marine fish, a trophy for which was donated by Mr and Mrs C. Hill, and a display of reptiles, kindly loaned by Mr D. Cox, which aroused considerable interest. For the first time since 1950 a Junior Award was incorporated and this was won by 7 years old Master D. Beard of Leamington with a London shubunkin. An interesting feature, particularly to the local visitors, was a display of river fish by the Trent River Authority, ranging from stone loaches to trout. The trophies, shields for first place, tea-towels with a suitably 'fishy' design for second place and fish food for third place, and the larger cups, were awarded on the Sunday by the president, Mr Harold Lymn. Admirable catering arrangements were the province of the Society's lady members. Dismantling of the show took place with what must be record speed.

By an ingenious plan, around 2,000 gallons were emptied from some 500 tanks in approximately 25 minutes. A large dustbin was connected to a two inch pump with the outlet going directly into the drain outside. It was then a case of all hands to the pump, as members competed with the pump to keep the water in the bin above the required level for the pumping to be maintained. Names of first-award winners in each class are:

Anabantids. Male fighters: Mr A. Manson (89 pts). Female fighters: Mr P. Reynolds (82 pts). Thick-lipped gouramy: Mr B. J. Scrimshaw (82 pts). Dwarf gouramy: Mr J. H. Dennie (86 pts). Lace gouramy: Mr D. Bates (78 pts). Blue gouramy: Mr K. Riley (80 pts). A.o.v. gouramy: Mr W. Parkin (88 pts). A.o.v. anabantid: Mr F. Underwood (76 pts).

Barbs. *B. sumbae*: Mr K. Hallam (82 pts). Rosy barb: Mr K. Riley (82 pts). Cummings barb: Mr A. Saxton (80 pts). Nigger barb: Mr G. Hodgkinson (86 pts). Chequer barb: Mr A. Sanderson (88 pts). Tiger barb: Mr K. Riley (80 pts). A.o.v. under 3 in.: Mr L. McCourt (80 pts). A.o.v. over 3 in.: Mr D. Bennett (82 pts). Red-tailed shark: Mr P. Reynolds (84 pts). Black shark: Mr W. Parkin (82 pts). Silver sharks: Master G. Rich (84 pts).

Characins. Flame fish: Mr A. Manson (71 pts). Glowlights: Mr S. Hill (72 pts). Neons: Mr F. Saunders (74 pts). Rosy tetras: Mr S. Hill (74 pts). Bleeding-heart tetras: Mr J. H. Dennie (75 pts). Black line tetra: Mr A. Manson (74 pts). Black serpas: Mr J. H. Dennie (72 pts). Black cardinal: Mr J. H. Dennie (76 pts). *Hemigrammus* species: Mr A. Hill (73 pts). Black widow: Mr B. C. Deanes (75 pts). Penguins: Mr H. W. Hughes (78 pts). X-ray fish: Mr C. A. Hill (74 pts). Golden pencil: Mr A. T. Gaskell (78 pts). Dwarf pencil: Mr A. T. Gaskell (73 pts). *Metynnis* species: Mr W. Taylor (76 pts). A.o.v. characin: Mr H. N. Hughes (80 pts).

Anostomidae. Headstanders: Mr E. Price (78 pts). Striped anostomus: Mr C. E. Mason (82 pts).

Livebearers. Green swordtails: Mr D. Turner (73 pts). Red swordtails: Mr K. W. Smales (76 pts). A.o.v. swordtails: Mr J. H. Dennie (80 pts). Moon platy: Mr J. H. Dennie (78 pts). Wagtail platy: Mr A. Beasley (76 pts). Variegated platy: Mr C. P. Rich (76 pts). Velifera molly: Mr K. Hallam (65 pts). A.o.v. mollie: Mr K. V. Smales (82 pts). Male guppy: Mr B. Wolstencroft (78 pts). Female guppy: Mr A. Baker (76 pts). A.o.v. livebearer: Mr P. Reynolds (77 pts).

Danios, minnows, rasboras. Zebra: Mr F. Gregory (82 pts). Giant danio: Mr K. Hallam (80 pts). White Cloud Mountain minnow: Mr F. E. Rogers (80 pts). Harlequin: Mr J. H. Dennie (80 pts). Scissortail: Mr F. Gregory (82 pts). A.o.v. rasbora: Mr J. H. Dennie (80 pts).

Cichlids. *Apistogramma* species: Mr J. H. Dennie (93 pts, best fish in show). *Cichlasoma* species: Mr B. J. Scrimshaw (82 pts). *Aquidens* species: Mr A. Sanderson (76 pts). Angels: Mr J. H. Dennie (77 pts). Jewel: Mr C. A. Hill (75 pts). Cichlids under 3 in.: Mr Mason (82 pts). Cichlids over 3 in.: Mr E. Miller (83 pts).

Top minnows. *Aphyosemion* species: Mr K. R. Lowe (82 pts). *Micropanchax* species: Mr K. Riley (75 pts). *Rivulus* species: Mr K. R. Lowe (80 pts). Top minnow a.o.v.: Mr B. J. Scrimshaw (84 pts).

Catfish and loaches. Bronze catfish: Mr E. Leggett (74 pts). Spotted catfish: Mr T. Foster (69 pts). Peppered catfish: Mr C. A. Hill (68 pts). Corydoras a.o.v.: Mr K. Wilbraham (76 pts). Catfish a.o.v.:

Continued overpage

Mr G. Hodgkinson (80 pts). Kuhli loach: Mr K. Hemingway (76 pts). *Cobitidae*: Mr K. Hemingway (70 pts).

Atherinidae. Rainbows: Master R. M. Hemmett (79 pts).

A.o.s. tropical fish. Mr L. McCourt (74 pts).

Pairs. Gouramis: Mr E. P. Rice (76 pts). Barbs: Mr F. C. Smith (78 pts). Characins: Mr W. Parkin (85 pts). Cichlids: Mr C. G. Hammett (80 pts). Livebearers: Mr K. Hemingway (78 pts).

Breeders livebearers: Mr J. H. Dermie (78 pts). Breeders egglayers: Mr K. Wilbraham (82 pts).

Coldwater species. Goldfish: Mr C. Hill (87 pts). London shubunkin: Master D. Beard (86 pts, best junior entry). Bristol shubunkin: Mr L. G. Emery (88 pts, best coldwater entry). Scaled fantail: Mr H. T. Jago (86 pts). Calico or veiltails: Mr L. G. Emery (84 pts). Orandas: Mr C. Hill (86 pts). Orfe: Mr C. Hill (83 pts). Rudd: Mr C. Hill (87 pts). Tench: Miss A. Hill (85 pts). A.o.s. coldwater: Mr L. G. Emery (87 pts). Breeders coldwater: Mr L. G. Emery (88 pts, best breeders in show).

Furnished aquaria tropical: Mr P. Reynolds (78 pts). Furnished coldwater aquaria (Mr F. Fern (80 pts). Plants: Mr F. S. Moorhouse (80 pts). Marine fish coldwater: Mr G. H. Jennings (75 pts).

AFTER a lapse of two years **HIGH WYCOMBE A.S.** once again held their open show in conjunction with the Wycombe Show. There were 140 entries and the judges, Mrs Ingrid Smith and Mr Tony Wilkinson, held the view that the quality of the entries was very high. Mr Zurmuehle (High Wycombe) took best fish in show with his *Osphromenus goramy*. Results were:

Club coldwater furnished aquaria: 1, High Wycombe. Individual coldwater furnished: 1, Mr P. Bayntun (High Wycombe). Common goldfish: 1 and 2, Mrs P. Chatterton. Fancy goldfish: 1, Mrs P. Bayntun. Shubunkins: 1, Mr E. Charfield (High Wycombe); 2, Mr A. Hastings (Hounslow); 3, Mr T. Pitts (Reading). A.v. platy or swordtail: 1, Mr D. V. Jones (S. Hampton, swordtail); 2, Mr C. E. Pike (High Wycombe, moon platy). A.o.v. livebearer: 1, Mr A. Price (sailfin mollie); 2, Mr R. Bayntun (*Limia vittata*). Characin: 1, Mr A. Hastings (Hounslow, cardinal tetra); 2, Mr L. Jordan (Bracknell, *Moenkhausia oligolepis*); 3, Mr N. Jordan (Bracknell, *Anostomus anostomus*). A.v. labyrinth: 1, Mr L. Zurmuehle (*Osphromenus goramy*); 2, Mr E. Charfield (dwarf gourami). Fighters: 1, Mr C. Beavis (High Wycombe). Rasboras, danios, minnows: 1, Mr L. Jordan (*Rasbora trilineata*); 2, Mr D. V. Jones (zebra). Barb: 1, Mr C. E. Pike (cherper barb); 2, Mr R. Bayntun (tony barb). Corydoras catfish: 1, Mr N. Jordan (*C. leopardus*); 2, Mr C. E. Pike (*C. aeneus*). A.o.v. catfish and loach: 1, Mr C. E. Pike (emerald catfish); 2, Mr G. A. Smith (Pimelodella); 3, Mr P. Merritt (*Brochis coeruleus*). Cichlids: 1, Mr P. Merritt (*Cichlasoma orellanis*); 2, Mr L. Jordan (*Aequidens pulcher*); 3, Mr L. Zurmuehle (African cichlid). A.o.v. tropical fish: 1, Mr N. Jordan (spiney eel); 2, Mr P. Merritt (*Labeo frenatus*). Breeders livebearers: 1, Mr C. E. Pike (platys); 2, Mr C. E. Pike (high-finned swordtails). Breeders egglayers: 1, Mr L. Jordan (acara); 2, Mr C. E. Pike (White Cloud Mountain minnow). Club tropical furnished aquaria: 1, High Wycombe; 2, Reading. Individual tropical furnished aquaria: 1, Mrs V. Beavis; 2, Mrs P. Bayntun; 3, Mrs Zurmuehle

Gorton's Show

THE **GORTON & OPENSHAW AQUARIUM SOCIETY's** second annual show was a huge success with 369 entries benched from 24 competing societies. Judging was carried out by Mr C. Walker (F.N.A.S.) and Mr A. Lindley (F.N.A.S.) and the awards and prizes were presented by the Gorton & Openshaw A.S. president, Mr John Yeats. Best fish in show award went to Mr Ken Parkes of Merseyside A.S. for a lemon fin barb and the best breeders in show award went to Mr Keith Wilbraham of Osram A.S. for a team of emperor tetras. Other awards were:

Guppies: 1, Mr J. Murray (Belle Vue); 2, Mr J. Head (Salford); 3, Mr B. Wolstencroft (Heywood). Mollies: 1, Mr M. Wilde (Stretford); 2, Mr R. Hughes (Belle Vue); 3, Mr L. McCourt (Gorton & Openshaw). Platys: 1, Mr G. Rich (Stockport); 2, Mr S. Smith (Blackpool); 3, Mr G. Hodgkinson (Gorton & Openshaw). Swordtails: 1, Mr R. Moorcroft (Merseyside); 2, E. Greenwood (Gorton); 3, Mrs M. Wilde (Stretford). Livebearer pairs: 1, Mr E. Mackay (Osram); 2, Mr M. Wilde (Stretford); 3, Mr T. Beasley (Heywood). Fighters: 1, Mr M. Fletcher (Glossop); 2, Mr T. Hallet (Clitheroe); 3, Mr T. Beasley (Heywood). A.o.v. anabantid: 1, Mr J. Smith (Blackpool); 2, Mr C. Jones (Blackpool); 3, Mr A. Wilkie (Stretford). Anabantid pairs: 1, Mr J. Smith (Blackpool); 2, Mr A. Gardner (Heywood); 3, Mr F. Price (Gorton). Small barbs: 1, Mr J. Smith (Blackpool); 2, Mr F. Gregory (Osram); 3, Mr D. Thomsells (Airebore). Large barbs: 1, Mr K. Parkes (Mersey); 2, R. Thomkinson (Glossop); 3, Mr L. McCourt (Gorton). Labeos: 1, Mr R. Hughes (Belle Vue); 2, Mr A. Gardner (Heywood); 3, Mr F. Newall (Glossop). Barb pairs: 1, Mr F. Gregory (Osram); 2, Mr W. Parkin (T.A.B.); 3, Mr J. Turner (T.A.B.). Dwarf cichlids: 1, Mr C. Jones (Blackpool); 2, Mr E. Price (Gorton); 3, Mr A. Maltby (Osram). Large cichlids: 1, Mr K. Parkes (Mersey); 2, Mr J. Logan (Gorton); 3, Mr A. Wilkie (Stretford). Angels: 1, Mr E. Jackson (Belle Vue); 2, Mr G. Hodgkinson (Gorton); 3, Mr E. Allan (Gorton). Cichlid pairs: 1, Mr C. Jones (Blackpool); 2, Mr E. Price (Gorton); 3, Mr G. Rich (Stockport). Small characins: 1, Mr F. Gregory (Osram); 2, Mr A. Seabright (Belle Vue); 3, Mr J. Robinson (Mersey). Medium characins: 1, Mr D. Cook (Glossop); 2, Mr K. Parkes (Mersey); 3, Mr S. Collinge (T.A.B.). Large characins: 1, Mr R. Wilkinson (Halifax); 2, Mr W. Taylor (Osram); 3, Mr A. Wilkie (Stretford). Characin pairs: 1, Mr W. Parkin (T.A.B.); 2, Mr D. Thomsells (Airebore); 3, Mr D. Thomsells (Airebore). Killifish: 1, Mr K. Wilbraham (Osram); 2, Mr J. Smith (Blackpool); 3, Mr T. Hallet (Clitheroe). Rasboras: 1, Mr J. Boardman (Leigh); 2, Mr D. Thomsells (Airebore); 3, Mr J. Robinson (Mersey). Danios: 1, Mr T. Beasley (Heywood); 2, Mr T. Beasley (Heywood); 3, Mr G. Rich (Stockport). Killie-danio pairs: 1, Mr J. Robinson (Mersey); 2, Mr F. Gregory (Osram); 3, Mr R. Moorcroft (Mersey). Corydoras cats: 1, Mr E. Price (Gorton); 2, Mr L. McCourt (Gorton); 3, Mr P. Moorhouse (Bradford). A.o.v. cats: 1, Mr W. Booth (Ashton); 2, Mr L. McCourt (Gorton); 3, M. G. Hodgkinson (Gorton). Loaches: Mr K. Parkes (Mersey); 2, Mr W. Taylor (Osram); 3, Mrs Grimshaw (Gorton). Catfish pairs: 1, Mr W. Parkin (T.A.B.); 2, Mr K. Parkes (Mersey); 3, Mr E. Price (Gorton).

Oddballs: 1, Mr D. Johnson (Stockport); 2, Mrs Wolstencroft (Heywood); 3, Mr G. Hodgkinson (Gorton). Marine: 1, Mr A. Birchall (Osram). A.v. coldwater: 1, Mr J. Butterworth (Valley); 2, Mr J. Greenwood (Stretford); 3, Mr J. Hillary (Gorton). Breeders egglayers: 1, Mr K. Wilbraham (Osram); 2, Mr J. Turner (T.A.B.); 3, Mr K. Wilbraham (Osram). Livebearer breeders: 1, Mr C. Jones (Blackpool); 2, Mr H. Page (Osram); 3, Mr R. Wilkinson (Halifax). Junior egglayers: 1, J. Sutton (Osram); 2, Miss Johnson (Stockport); 3, P. Carrol (Huddersfield). Junior egglayers: 1, Mr M. Wilkinson (Clitheroe); 2, P. Redmond (Gorton); 3, P. Hodgkinson (Gorton).

Bristol A.S. Annual Open Show

BRISTOL A.S. held its annual open show of tropical, coldwater and marine fishes on 23rd and 24th September. The judges in the coldwater section were Mr V. Capaldi, Mr W. Hicks, Mr T. L. Dodge, Mr L. G. Emery and Mr Paul and in the tropical section were Mr Smith, Mr L. G. Emery and Mr Wheeler. Entries came from all over the west country and the coldwater section of the show lived up to the expectations of this society, which is one of the foremost 'coldwater' societies in the country.

Mr F. Brown of Bristol took awards for best tropical in show, best egglayer in show, and best fish in show with a tiger catfish that received 83 pts. Mr Brown also obtained best livebearer in show and highest total points in show. The best fancy coldwater fish and best shubunkin awards were obtained by Mr W. Hicks.

Goldfish: 1 and 3, Mr H. T. Jago; 2, Mr W. Reeves; 4, Mr N. H. Wright. Bristol shubunkins, 3 in. limit: 1, Mr W. Hicks; 2, Mr T. L. Dodge; 3, Mr M. L. Annely; 4, Mr H. J. Whiting. Bristol shubunkins, over 3 in. and under 5 in.: 1, Mr M. L. Annely; 2 and 3, Mr W. Hicks; 4, Mr G. J. Bell. Veiltails: 1 and 4, Mr R. J. King; 2, Mr S. T. Tibble; 3, Mr L. G. Emery. Moors: 1 and 3, Mr R. J. King; 2, Mr R. L. Dodge; 4, Mr S. T. Tibble. Telescopes, lionheads, celestials, etc.: 1, 2 and 4, Mr L. G. Emery; 3, Mr V. Capaldi. Orandas: 1, Mr T. Roberts; 2, Mr V. Capaldi; 3, Mr M. L. Annely; 4, Mr L. G. Emery. Nymphs and comets: 1 and 3, Mr F. Radford; 2, Mr R. Berry. Scaled fantails: 1, 2 and 3: Mr V. Capaldi; 3,

Mr G. Hodgkinson (80 pts). Kuhli loach: Mr K. Hemingway (76 pts). Cobitidae: Mr K. Hemingway (70 pts).

Atherinidae. Rainbows: Master R. M. Hemmett (79 pts).

A.o.s. tropical fish. Mr L. McCourt (74 pts).

Pairs. Gouramis: Mr E. P. Rice (76 pts). Barbs: Mr F. C. Smith (78 pts). Characins: Mr W. Parkin (85 pts). Cichlids: Mr C. G. Hammett (80 pts). Livebearers: Mr K. Hemingway (78 pts).

Breeders livebearers: Mr J. H. Dernie (78 pts). Breeders egglayers: Mr K. Willbraham (82 pts).

Coldwater species. Goldfish: Mr C. Hill (87 pts). London shubunkin: Master D. Beard (88 pts, best junior entry). Bristol shubunkin: Mr L. G. Emery (88 pts, best coldwater entry). Scaled fantail: Mr H. T. Jago (86 pts). Calico or veiltails: Mr L. G. Emery (84 pts). Orandas: Mr C. Hill (86 pts). Orfe: Mr C. Hill (83 pts). Rudd: Mr C. Hill (87 pts). Tench: Miss A. Hill (85 pts). A.o.s. coldwater: Mr L. G. Emery (87 pts). Breeders coldwater: Mr L. G. Emery (88 pts, best breeders in show).

Furnished aquaria tropical: Mr P. Reynolds (78 pts). Furnished coldwater aquaria (Mr F. Fren (80 pts). Plants: Mr P. S. Moorhouse (80 pts). Marine fish coldwater: Mr G. H. Jennings (75 pts).

AFTER a lapse of two years **HIGH WYCOMBE A.S.** once again held their open show in conjunction with the Wycombe Show. There were 140 entries and the judges, Mrs Ingrid Smith and Mr Tony Wilkinson, held the view that the quality of the entries was very high. Mr Zurmuehle (High Wycombe) took best fish in show with his *Osphromenus goramy*. Results were:

Club coldwater furnished aquaria: 1, High Wycombe. Individual coldwater furnished: 1, Mr P. Bayntun (High Wycombe). Common goldfish: 1 and 2, Mrs P. Chatterton. Fancy goldfish: 1, Mrs P. Bayntun. Shubunkins: 1, Mr E. Charfield (High Wycombe); 2, Mr A. Hastings (Hounslow); 3, Mr T. Pyrs (Reading). A.v. platy or swordtail: 1, Mr D. V. Jones (S. Hampton, swordtail); 2, Mr C. E. Pike (High Wycombe, moon platy). A.o.v. livebearer: 1, Mr A. Price (sailfin molly); 2, Mr R. Bayntun (*Limia vittata*). Characin: 1, Mr A. Hastings (Hounslow, cardinal tetra); 2, Mr L. Jordan (Bracknell, *Moenkhausia oligolepis*); 3, Mr N. Jordan (Bracknell, *Anostomus anostomus*). A.v. labyrinth: 1, Mr L. Zurmuehle (*Osphromenus goramy*); 2, Mr E. Charfield (dwarf gouramu). Fighters: 1, Mr C. Beavis (High Wycombe). Rasboras, danios, minnows: 1, Mr L. Jordan (*Rasbora trilineata*); 2, Mr D. V. Jones (zebra). Barb: 1, Mr C. E. Pike (chequer barb); 2, Mr R. Bayntun (rosy barb). Corydoras catfish: 1, Mr N. Jordan (*C. leopardus*); 2, Mr C. E. Pike (*C. aeneus*). A.o.v. catfish and loach: 1, Mr C. E. Pike (emerald catfish); 2, Mr G. A. Smith (Pimelodella); 3, Mr P. Merritt (*Brochis coeruleus*). Cichlids: 1, Mr P. Merritt (*Cichlasoma orithoris*); 2, Mr L. Jordan (*Aequidens pulcher*); 3, Mr L. Zurmuehle (African cichlid). A.o.v. tropical fish: 1, Mr N. Jordan (spiney eel); 2, Mr P. Merritt (*Labeo frenatus*). Breeders livebearers: 1, Mr C. E. Pike (platys); 2, Mr C. E. Pike (high-finned swordtails). Breeders egglayers: 1, Mr L. Jordan (acara); 2, Mr C. E. Pike (White Cloud Mountain minnow). Club tropical furnished aquaria: 1, High Wycombe; 2, Reading. Individual tropical furnished aquaria: 1, Mrs V. Beavis; 2, Mrs P. Bayntun; 3, Mrs Zurmuehle

Gorton's Show

THE **GORTON & OPENSHAW AQUARIUM SOCIETY's** second annual show was a huge success with 369 entries benched from 24 competing societies. Judging was carried out by Mr C. Walker (F.N.A.S.) and Mr A. Lindley (F.N.A.S.) and the awards and prizes were presented by the Gorton & Openshaw A.S. president, Mr John Yeats. Best fish in show award went to Mr Ken Parkes of Merseyside A.S. for a lemon fin barb and the best breeders in show award went to Mr Keith Wilbraham of Osram A.S. for a team of emperor tetras. Other awards were:

Guppies: 1, Mr J. Murray (Belle Vue); 2, Mr J. Head (Salford); 3, Mr B. Wolstencroft (Heywood). Mollies: 1, Mr M. Wilde (Stretford); 2, Mr R. Hughes (Belle Vue); 3, Mr L. McCourt (Gorton & Openshaw). Platys: 1, Mr G. Rich (Stockport); 2, Mr S. Smith (Blackpool); 3, Mr G. Hodgkinson (Gorton & Openshaw). Swordtails: 1, Mr R. Moorcroft (Merseyside); 2, E. Greenwood (Gorton); 3, Mrs M. Wilde (Stretford). Livebearer pairs: 1, Mr E. Mackay (Osram); 2, Mr M. Wilde (Stretford); 3, Mr T. Beasley (Heywood). Fighters: 1, Mr M. Fletcher (Glossop); 2, Mr T. Hallet (Clitheroe); 3, Mr T. Beasley (Heywood). A.o.v. anabantid: 1, Mr J. Smith (Blackpool); 2, Mr C. Jones (Blackpool); 3, Mr A. Wilkie (Stretford). Anabantid pairs: 1, Mr J. Smith (Blackpool); 2, Mr A. Gardner (Heywood); 3, Mr E. Price (Gorton). Small barbs: 1, Mr J. Smith (Blackpool); 2, Mr F. Gregory (Osram); 3, Mr D. Thomsells (Aireboro). Large barbs: 1, Mr K. Parkes (Mersey); 2, R. Thomkinson (Glossop); 3, Mr L. McCourt (Gorton). Labeos: 1, Mr R. Hughes (Belle Vue); 2, Mr A. Gardner (Heywood); 3, Mr F. Newall (Glossop). Barb pairs: 1, Mr F. Gregory (Osram); 2, Mr W. Parkin (T.A.B.); 3, Mr J. Turner (T.A.B.). Dwarf cichlids: 1, Mr C. Jones (Blackpool); 2, Mr E. Price (Gorton); 3, Mr A. Maltby (Osram). Large cichlids: 1, Mr K. Parkes (Mersey); 2, Mr J. Logan (Gorton); 3, Mr A. Wilkie (Stretford). Angels: 1, Mr E. Jackson (Belle Vue); 2, Mr G. Hodgkinson (Gorton); 3, Mr E. Allan (Gorton). Cichlid pairs: 1, Mr C. Jones (Blackpool); 2, Mr E. Price (Gorton); 3, Mr G. Rich (Stockport). Small characins: 1, Mr F. Gregory (Osram); 2, Mr A. Seabright (Belle Vue); 3, Mr J. Robinson (Mersey). Medium characins: 1, Mr D. Cook (Glossop); 2, Mr K. Parkes (Mersey); 3, Mr S. Collinge (T.A.B.). Large characins: 1, Mr R. Wilkinson (Halifax); 2, Mr W. Taylor (Osram); 3, Mr A. Wilkie (Stretford). Characin pairs: 1, Mr W. Parkin (T.A.B.); 2, Mr D. Thomsells (Aireboro); 3, Mr D. Thomsells (Aireboro). Killifish: 1, Mr K. Wilbraham (Osram); 2, Mr J. Smith (Blackpool); 3, Mr T. Hallet (Clitheroe). Rasboras: 1, Mr J. Boardman (Leigh); 2, Mr D. Thomsells (Aireboro); 3, Mr J. Robinson (Mersey). Danios: 1, Mr T. Beasley (Heywood); 2, Mr T. Beasley (Heywood); 3, Mr G. Rich (Stockport). Killie-danio pairs: 1, Mr J. Robinson (Mersey); 2, Mr F. Gregory (Osram); 3, Mr R. Moorcroft (Mersey). Corydoras cats: 1, Mr E. Price (Gorton); 2, Mr L. McCourt (Gorton); 3, Mr P. Moorhouse (Bradford). A.o.v. cats: 1, Mr W. Booth (Ashton); 2, Mr L. McCourt (Gorton); 3, M. G. Hodgkinson (Gorton). Loaches: Mr K. Parkes (Mersey); 2, Mr W. Taylor (Osram); 3, Mrs Grimshaw (Gorton). Catfish pairs: 1, Mr W. Parkin (T.A.B.); 2, Mr K. Parkes (Mersey); 3, Mr E. Price (Gorton).

Oddballs: 1, Mr D. Johnson (Stockport); 2, Mrs Wolstencroft (Heywood); 3, Mr G. Hodgkinson (Gorton). Marine: 1, Mr A. Birchall (Osram). A.v. coldwater: 1, Mr J. Butterworth (Valley); 2, Mr J. Greenwood (Stretford); 3, Mr J. Hillary (Gorton). Breeders egglayers: 1, Mr K. Wilbraham (Osram); 2, Mr J. Turner (T.A.B.); 3, Mr K. Wilbraham (Osram). Livebearer breeders: 1, Mr C. Jones (Blackpool); 2, Mr H. Page (Osram); 3, Mr R. Wilkinson (Halifax). Junior egglayers: 1, J. Sutton (Osram); 2, Miss Johnson (Stockport); 3, P. Carrol (Huddersfield). Junior egglayers: 1, Mr M. Wilkinson (Clitheroe); 2, P. Redmond (Gorton); 3, P. Hodgkinson (Gorton).

Bristol A.S. Annual Open Show

BRISTOL A.S. held its annual open show of tropical, coldwater and marine fishes on 23rd and 24th September. The judges in the coldwater section were Mr V. Capaldi, Mr W Hicks, Mr T. L. Dodge, Mr L. G. Emery and Mr Paul and in the tropical section were Mr Smith, Mr L. G. Emery and Mr Wheeler. Entries came from all over the west country and the coldwater section of the show lived up to the expectations of this society, which is one of the foremost 'coldwater' societies in the country.

Mr F. Brown of Bristol took awards for best tropical in show, best egglayer in show, and best fish in show with a tiger catfish that received 83 pts. Mr Brown also obtained best livebearer in show and highest total points in show. The best fancy coldwater fish and best shubunkin awards were obtained by Mr W. Hicks.

Goldfish: 1 and 3, Mr H. T. Jago; 2, Mr W. Reeves; 4, Mr N. H. Wright. Bristol shubunkins, 3 in. limit: 1, Mr W. Hicks; 2, Mr T. L. Dodge; 3, Mr M. L. Annely; 4, Mr H. J. Whiting. Bristol shubunkins, over 3 in. and under 6 in.: 1, Mr M. L. Annely; 2 and 3, Mr W. Hicks; 4, Mr G. J. Bell. Veiltails: 1 and 4, Mr R. J. King; 2, Mr S. T. Tibble; 3, Mr L. G. Emery. Moors: 1 and 3, Mr R. J. King; 2, Mr R. L. Dodge; 4, Mr S. T. Tibble. Telescopes, lionheads, celestials, etc.: 1, 2 and 4, Mr L. G. Emery; 3, Mr V. Capaldi. Orandas: 1, Mr T. Roberts; 2, Mr V. Capaldi; 3, Mr M. L. Annely; 4, Mr L. G. Emery. Nymphs and comets: 1 and 3, Mr F. Radford; 2, Mr R. Berry. Scaled fantails: 1, 2 and 3: Mr V. Capaldi; 3,

Mr E. A. Mason. Calico fantails: 1 and 2, Mr N. Grimston; 3, Mr A. R. Pyne; 4, Mr S. T. Tibble. A.v. pond or river fish, 9 in. maximum: 1, Mr G. Gillard; 2 and 3, Mr R. Light; 4, Mr D. D. Headford. Bristol shubunkins, breeders: 1, Mr L. G. Emery; 2, 3 and 4: Mr H. J. Whiting. Moors, breeders: 1 and 2, Mr K. Grimston; 3, Mr S. T. Tibble; 4, Mr R. J. King. A.o.v. fancy breeders: 1 and 2, Mr S. T. Tibble; 3 and 4, Mr H. T. Jago. Breeders class, Bristol shubunkins and comets: 1, Mr L. G. Emery; 2 and 3, Mr H. J. Whiting; 4, Mr R. Oxenham. Breeders class, veils, moors, etc.: 1, Mr S. T. Tibble; 2 and 4, Mr H. T. Jago; 3, Mr L. G. Emery. Bristol shubunkins pairs: 1 and 2, Mr M. L. Annely; 3, Mr W. Hicks; 4, Mr G. J. Bell. Novice class Bristol shubunkins: 1 and 3, Mr G. J. Bell; 2, Mr R. J. King; 4, Mr W. H. Clark.

Furnished aquaria, coldwater: 1, Mr W. Bryant; 2, Mr P. Capaldi; 3, Mr S. Lloyd; 4, Mr S. Savage. Furnished aquaria, inter-club: 1, Yeovil & D. A.S.; 2, Keynsham & D. A.S.; 3 and 4, Bristol A.S. Plants, coldwater: 1, Mrs I. Stone; 2, Mr J. Savage; 3 and 4, Mr S. Lloyd. Plants, tropical: 1, Mr K. C. Pearce; 2, Mr N. H. Wright; 3, Mr S. Farley; 4, Mr W. G. Ham.

Fighting fish: 1, Mr F. Brown; 2, Mr N. C. Stainer; 3, Mr S. Morgan; 4, Mr M. Taylor. A.o.v. labyrinths: 1, Mr F. Brown; 2, Mr H. Horsey; 3, Mr P. W. Jinks; 4, Mr M. Taylor. Barbs: 1, Mr F. Brown (cheaper barb); 2 and 3, Mr E. Vernon; 4, Mr N. C. Stainer. *Hemigrammus* and *Hyphessobrycon*: 1, Mr I. Andrews; 2, Mr E. A. Short; 3, Mr F. Brown; 4, Mr P. W. Jinks. A.o.v. characins: 1, Mr K. C. Pearce; 2, Mr E. A. Short; 3, Mr F. Brown; 4, Mr Scott Morgan. Cichlids except angels: 1, Mr Scott Morgan; 2, Mr D. N. Pimm; 3 and 4, Mr M. J. Howe. Angels: 1, Mr I. Andrews; 2, Mr G. Gillard; 3, Mr Scott Morgan. A.o.v. egglayers: 1 and 4, Mr I. Andrews; 3, Mr F. Brown. Catfish: 1 and 2, Mr F. Brown; 3, Mr Scott Morgan; 4, Mr G. S. Stone. Guppies, short tail: 1 and 4, Mr K. G. Pearce; 2, Mr S. Morgan; 3, Mrs Cotterill. Guppies, long tail: 1, 2, 3 and 4: Mr P. W. Jinks. Guppies, female: 1, Mr M. Taylor; 2, Mr W. G. Ham; 3, Mr K. G. Pearce; 4, Mr S. Morgan. Swordtails: 1, Mr F. Brown; 2 and 3, Mr Scott Morgan; 4, Mrs Kimber. A.o.v. livebearers: 1 and 3, Mr C. H. Bushell; 2 and 4, Mr Scott Morgan. Tropical breeders, livebearers: 1, Mr F. Brown; 2, Mr J. B. Powell; 3, Mr N. H. Wright; 4, Mr N. C. Stainer. Tropical breeders, egglayers: 1, Mr F. Brown; 2, Mr Perry; 3, Mr W. Lewis; 4, Mr G. Gillard. Marine exhibits, furnished aquaria: 1, Mr S. Lloyd; 2, Mr M. S. Bellis.

RESULTS of The Brent Show 1966 **(WILLESDEN & D. A.C.)** held on 10th and 11th September (aquaria section):

Inter-club furnished aquaria (coldwater) open: 1, Hampstead A.S.; 2, Marine Study Aquatic Society. Inter-club furnished aquaria (tropical) open: 1, High Wycombe A.S.; 2, L.T.E.; 3, Willesden & District A.C.; 4, Independent A.C. Open-individual furnished aquaria (coldwater): 1, Mr A. R. Sutton; 2, Mrs P. Bayntun; 3, Mr G. H. Jennings. Open-individual furnished aquaria (tropical): 1, Mr R. Hawkins; 2, Mr J. Stewart; 3, Mr R. Hawkins; 4, Mrs V. Beevis. Junior furnished aquaria (miniature): 1, Master P. Bur. (F.B.A.S. Junior Trophy); 2, Master C. Chapman; 3, Miss M. Sherwin; 4, Master Cy Selvarajanam.

Common goldfish: 1, Master G. Brown; 2, Mrs P. Whittington; 3, Master G. Brown; 4, Mr A. R. Sutton. Shubunkin: 1, Miss D. Morris; 2, Miss D. Morris; 3, Mr R. M. Whittington; 4, Mr R. M. Whittington. Native and foreign coldwater (A.S. or v): 1 and 3, Mr W. R. Sherwin; 2, Master G. Brown; 4, J. A. Kettle. A.v. fancy goldfish: 1 and 3, Mr A. R. Sutton; 2, Miss D. Morris; 4, Miss D. Morris.

Male guppies: 1, Mr G. Aylard; 2, Mr G. B. Bass; 3, Mr C. J. S. Cobley; 4, Mr W. R. Sherwin. Female guppies: 1 and 3, Mr G. B. Bass; 2, Mrs P. Edney; 4, Mr W. R. Sherwin. A.v. mollie: 1, Mr D. J. Woodward; 2, Mr R. J. Thorne. A.v. platy: 1, Mr C. Pike; 2, Mr G. Aylard; 3, Mr C. E. Greenhalf; 4, Mrs E. Glass. A.v. swordtail: 1, Mr G. Aylard; 2 and 3, Mr C. E. Greenhalf; 4, Mrs I. Brown.

A.v. barb: 1 and 3, Mr R. J. Porter (best in show); 2, Mr D. J. Woodward; 4, Mr R. J. Thorne. A.v. characin: 1, Mr R. J. Porter; 2 and 3, Mr Roy Biggs; 4, Mr P. Wilson. A.v. labyrinth: 1, Mr R. J. Porter; 2, Mr R. J. Thorne; 3, Mrs E. Glass; 4, Mr C. E. Greenhalf. A.v. corydoras: 1, Mr Roy Biggs (F.B.A.S. trophy); 2, Mr C. E. Greenhalf; 3, Mr J. R. Keeley; 4, W. R. Sherwin. A.o.v. catfish: 1, Mr R. J. Thorne; 2 and 4, Mrs E. Glass; 3, Mr C. E. Greenhalf. A.v. cichlid: 1, Mrs E. Glass; 2, Mr R. J. Porter; 3, Mr J. A. Chapman; 4, Mr D. J. Woodward. Danios, rasboras, minnows: 1, Mr G. Aylard; 2 and 4, Mr Roy Biggs; 3, Mrs I. Brown. Egglaying tooth carps: 1 and 3, Mrs E. Glass; 3, Mr C. Cobley; 4, Mr D. J. Woodward. A.o.v. tropical fish: 1 and 4, Mr R. J. Porter; 2 and 3, Mr R. Cooper.

At the above show the North West London Group of Aquarist Societies held its own show; results were as follows: Furnished aquaria: 1, Willesden; 2, Independent; 3, Hampstead. Common goldfish: 1, 2 and 4, Mr G. Brown (Willesden); 3, Mr A. R. Sutton (Hendon). Native and foreign coldwater: 1 and 3, Mr W. R. Sherwin (Willesden); 2, Mr G. Brown (Willesden); 4, Mr J. A. Kettle (Independent). A.v. fancy goldfish: 1, 2 and 3, Mr A. R. Sutton (Hendon); 4, Mr T. W. Glass (Willesden).

Best fish in show: Mr A. R. Sutton (A.v. fancy, Hendon). Points to date: Hampstead, 10; Independent, 49; Riverside, 32; Hendon, 23; Willesden, 47.

A NEW secretary for **MORAY AQUARIST SOCIETY**: Mr J. W. Rawlings, 4 Gordon Street, Hopeman, Moray.

IT IS with great regret that we learn of the death of Mr T. Adamson, honorary secretary of the Rowntree Aquarist Society and honorary secretary of the Association of Yorkshire Aquarist Societies. The letter written by Mr Adamson and printed on p. 238 was forwarded to us for publication by his son, who felt that this is what Mr Adamson would have wished.

Dates for your Diary

12th November. **HENDON & D. A.S.** 1966 Convention, Whitefields Secondary School, Claremont Road, London, N.W.2. The guest speaker will be Dr D. Backhaus, curator of the Exotarium, Hamburg Zoo. Further details from the secretary, Mr G. W. Bostock, 50 Whitchurch Avenue, Edgware, Middlesex.

14th–19th November. **NATIONAL HOBBIES FAIR**. The R.H.S. Old Hall, Vincent Square, London, S.W.1. Come and see **PFM** at our stand there.

26th November. **FUR, FEATHER & AQUARIA SHOW.** Aquaria Section organised in association with the Essex, North and East London Aquarists' Association. At the King's Hall, Lower Clapton Road, London, E.5 from 1 to 8 p.m. Show secretary Mr A. Collings, 11 Arrowsmith Road, Chigwell, Essex.

3rd December. **FEDERATION OF BRITISH AQUATIC SOCIETIES** general meeting at Conway Hall, Red Lion Square, London, W.C.1.

7th May 1967. **ASSOCIATION OF YORKSHIRE AQUARIST SOCIETIES** Open Show, Hull. (Subject to confirmation; details awaited).

THROUGHOUT 1967: Keep your dates with the aid of the PetFish pocket diary for aquarists (6s 6d post free from PFM's offices).

Classified ADVERTISEMENTS

AQUATIC SUPPLIERS

REMEMBER the most prosperous and go-ahead firms are supplied by C. J. SKILTON, AQUARIST, the complete wholesaler. 139 Galleywood Road Chelmsford, Essex. Phone 56878.

PLYMOUTH TROPICALS for your fish, plants and equipment. North Hill Nurseries, Tavistock Road, Plymouth. Phone 62663.

FISHERMAN'S COVE, 35 Monmouth Street (on main A38), Bridgwater, Somerset. Phone 3941. The finest show of trops. west of London. Extensive stocks of equipment. Bow tanks, s/steel etc. Open until 8.0 p.m. Friday.

KINGPETS keep fish in BATH, tropical and coldwater. Full range of equipment and books; bow fronts. Plants for pools and aquaria. Plastic and fibreglass pools, streams, fountains. Reptiles and other animals. 23 Brock Street, Bath. Phone 4028.

REPTILES AND AMPHIBIA

REPTILES, AMPHIBIANS. S.A.E. for list. J. & D. Naturalists, 36 Nazeby Avenue, Crosby, Liverpool 23.

PLACE an order with your supplier for next month's issue of PETFISH MONTHLY now.

Aquarium Paperbacks by Post

10s 6d each (post 7d)

BREEDING AQUARIUM FISH
by Dr Wolfgang Wickler

AQUARIUM PLANTS
by Gerhard Brunner

AQUARIUM HYGIENE
by Hellmuth Wachtel

POND LIFE IN THE AQUARIUM
by Horst Janus

PetFish Publications

554, Garratt Lane, London S.W.17

CLASSIFIED ADVERTISEMENTS

Rates: 6d. per word (minimum charge 6s.); Box Number 2s. extra if required. Remittance with order to be sent to

PetFish Monthly
554 Garratt Lane, S.W.17

EQUIPMENT

LARGE AQUARIA FRAMES, SHADES, STANDS. Any size to order, S.A.E. Carriage paid, cash with order. Money back if not satisfied. 36½ × 15 × 12 in., 28s 1½ × 1½ × ¼ in. steel angle: 42 × 15 × 12 in., 36s; 42 × 15 × 15 in., 39s; 48 × 15 × 12 in., 42s; 48 × 15 × 15 in., 45s; 60 × 15 × 12 in., 50s. Aluminium shades: 36½ × 12 in., 28s; 42 × 12 in., 32s; 42 × 15 in., 36s; 48 × 12 in., 40s; 48 × 15 in., 45s; 60 × 12 in., 50s. Stands, 36 in. high to take two tanks 18½ × 10 in., 28s; 18½ × 12 in., 32s; 24½ × 12 in., 38s; 30½ × 12 in., 43s; 37 × 12 in., 48s; 1½ × 1½ × ¼ in. steel angle—42½ × 12 in., 55s; 42½ × 15 in., 58s; 48½ × 12 in., 60s; 48½ × 15 in., 65s; 60½ × 12 in., 70s. HOCKNEY ENGINEERS, Derwent Place, Bath Road, Leeds 11. Phone 25061.

BLANKET WEED REMOVER. In stainless steel, most effective, removing blanket weed from all plants without damage. Price 3s 9d plus 9d postage. SHREDDERS: Made of stainless steel the Super Combination comprises coarse tooth and fine tooth plates, and top plate with handle. The Shredders, the only instrument capable of reducing earthworm, whiteworm, meat etc. to a size suitable for youngest fry. Use coarse plate for larger fish. Price 26s plus 1s postage. Giant Sagittaria: young plants, 5s, 7s 6d, 8s 6d per dozen; large plants 1s 3d, 1s 6d each. Postage 1s 3d. Shubunkins: Enquiries invited. Visits by appointment only. S.A.E. to E. S. Walker, 143-145 Bure Lane, Christchurch, Hants. Postal trade only. Local buyers see COOKS AQUARIA, Boscombe, Hants.

BOOKS

YOUR COPY of PETFISH MONTHLY will not be missed if you ask us to send it to you by post each month. Send 17s 6d (for 6 issues) or £1 15s (for 12 issues) to PetFish Publications, 554 Garratt Lane, London, S.W.17 and please state the month of the issue with which you wish the subscription to start.

FISH

SUPERB VEILTAIL GUPPIES Awarded 'Water Life' diploma. Best in open show. £1 per pair, carriage 5s. C. R. Perry, Professional Aquarist, 615 West Street, Crewe.

OLDBURY'S OF CHESTER. 100 varieties tropical fish, freshwater and marine. 40 varieties plants. Equipment. Live foods. Evenings after 7 p.m. Weekends from 2 p.m. 36 Pearl Lane, Vicars Cross, Chester 41671.

MISCELLANEOUS

CUPS, trophies, medals, badges. S.A.E. for catalogue. Kings, 141 St John's Road, Waterloo, Liverpool 22.

SHOW JARS. New glass show jars, with black screw tops, 4 in. square, 6 in. deep, 3s each, 33s dozen, for collection only (South London area). Box 53.

WATER PLANTS

CULTIVATED AQUARIUM PLANTS. Elodea, natans, Myriovertii, Parrot's feather, torta, Ludwigia, Bacopa, Hygrophila, spiralis, Lysimachia, hornwort, Vallis. spiralis, Herpestris, 6d each or 5s dozen. Cabomba, Ambulia, Rotala rotundifolia, pigmy chain, Cardamine rotundifolia, water ivy, 9d each or 8s dozen.

Aponogeton corms, 1s each; giant Sag., giant Vallis., water strawberry, water nasturtium, water Sedum, 1s 6d each; hair grass, Nymphaea stellata, Acorus pusillus, Malayan swords, 2s each; banana plants, Echinodorus tuberose, Alternanthera sessilus, Blyxa japonica, giant Hygro., willow leaf Hygro., Borneo ferns, water wisteria, dwarf Crypto.'s, Crypto. ciliata, 2s 6d each; Lobelia cryptofolia, fountain plant, Crypto. balansae, 3s 6d each; Aponogeton distachyon, Ophiopogan variegatus, 6s 6d each; Amazon swords, 4s 6d each; radicans, acorus, intermedius, Barclaya mottleyii, 7s 6d each. Please add 1s postage on orders under 15s. VICTORIA AQUATICS, STAITHES, SALTBURN, YORKS.

LETTERS

Continued from page 238

Societies . . . are affiliated to the F.B.A.S. and so receive all material'.

In May of this year I was elected secretary of the A.Y.A.S. No correspondence from the Federation has reached me since that date. I have scrutinised back-correspondence files: in February, 1959 the then secretary approached the F.B.A.S. about show standards etc.; subsequently intermittent reports on Federation matters were received until 1964, when contact between ourselves and the Federation appears to have ceased.

Mr G. Jennings (May issue) expresses my personal desire in advocating greater co-ordinated organisation and recognition among the various bodies. The A.Y.A.S. will be only too pleased to co-operate in the exchange of news and information between Federations, Associations and Societies throughout Great Britain and elsewhere.

This letter is not written in any spirit of criticism or of contradiction of the F.B.A.S. or its officers. It is a sincere effort to establish lasting, mutually advantageous contact between the A.Y.A.S. the F.B.A.S. and all other interested organisations.

T. ADAMSON
Secretary,
Association of Yorkshire Aquarist Societies

WITH reference to the sanguinary Mr J. Stillwell I consider that it is regrettable that he wrote his letter (PETFISH MONTHLY, October) before the F.B.A.S. meeting on 3rd September. It is only fair to acquaint readers with the following facts:

(1) The Three Counties Group were strongly represented at this meeting, rubbing shoulders with many old friends.

(2) Their complaints of receiving the 'Mushroom Treatment', i.e. fed on bull and kept in the dark, were found to be not without some foundation.

(3) They publicly stated that they were prepared to help the Federation, especially by the work of their study group, on the old problem of points for size, provided that they were kept in the picture.

(4) One of their delegates offered his services on their committee; I wonder if he has received a copy of the minutes of that meeting, let alone an acknowledgment of his offer?

(5) The list of judges and speakers to which our poor haemorrhaging heart sarcastically alluded was received quite coincidentally only a couple of weeks before the F.B.A.S. meeting.

(6) Reference to the alleged clashing of the Three Counties show fixtures is irrelevant. The host club, a new club at that, was not officially affiliated to the F.B.A.S. . . . no fault of theirs, however, they had applied months previously but had not received an answer. More mushrooms?

(7) The Three Counties Group have nothing but genuine admiration for the delegates from the deep South and regret their own inability to attend meetings in London on a regular basis. Perhaps the F.B.A.S. would consider holding some of the meetings in Reading, a choice far nearer for Portsmouth and Southampton, only half a dozen miles more for Brighton and, quite obviously, ideal for the Three Counties Group.

So please, dear heart, don't give the impression that our Group is not most grateful to that dedicated band of judges who so often have ventured into the Highwayman's Country. They are a grand lot. For heaven's sake let us cement good relations by improving communications.

R. A. DOVE
Vice-chairman,
Bracknell A.S.

Forthcoming Society Handbook

ENCOURAGED by the tremendous success which the first edition of the HANDBOOK of the Federation of Scottish Aquarist Societies enjoyed, the council have decided to proceed with more ambitious plans for the next edition to be published in January.

While much of the content will remain directly connected with the F.S.A.S., it is intended to expand the section devoted to the activities of associated bodies, such as the British Killifish Association, and the Fancy Guppy Association, to include details of the Associations which were overlooked in the last issue. It is also proposed to introduce a section on programme aids giving information on films and slides which are available for hire to societies. The Pet Shop Directory will be enlarged to include dealers in England, Wales and Ireland.

Such an undertaking cannot be accomplished without the co-operation of individual aquarists, active societies and pet trades throughout the United Kingdom. To this end a questionnaire was recently sent to societies seeking their co-operation in compiling the necessary information. If your society did not receive a questionnaire, please accept my apologies, as the reason would no doubt be beyond my control. If you would care to help, I should be extremely grateful if you will send me details of the following.

(1) The name and address of any pet dealers in your area.
(2) The name and details of any zoo or public aquaria in your area.
(3) The name and source of any film connected with the hobby which you may have seen.
(4) The source of any slides available for hire.
(5) Details of any Body associated with fishkeeping.

Entries in the Pet Shop Directory will be made entirely free of charge. Pet traders have merely to send me details of their business name and address to have these included. Traders who wish to take advertising space may have particulars on request.

Last year's HANDBOOK was printed to a very high professional standard, and was circulated to some 600 aquarists in Scotland. Copies were also distributed in

F.S.A.S Handbook

Continued from page 259

England and America and were well received in these countries.

In an effort to increase the circulation of our HANDBOOK and because we feel that the revised edition will be of interest to aquarists outside Scotland, order forms have been sent to Societies. These Societies who did not receive an order form and who wish to place an order may do so simply by writing to me. The cost will be 2s 6d plus 6d postage, but remittances should not be included with the order as an invoice will be sent with the order. Society orders for eight copies or more will be sent post free. It is regretted that further orders cannot be placed after publication. All information should be sent to me by 15th November and all orders should reach me not later than 15th December.

In conclusion may I express the hope that aquarists throughout the United Kingdom will rally to support this bold venture by sending helpful information and by ordering a copy.

76 Campsie Crescent,
Kirkcaldy, Fife

ROBERT M. COOPER
Secretary,
Federation of Scottish Aquarist Societies

Books by post for the fish-keeper

PUT A BOOK ON YOUR CHRISTMAS PRESENT LIST THIS YEAR

All about Tropical Fish
by Derek McInerny and Geoffrey Gerrard

Widely recognised as one of the most helpful books on aquarium-keeping with its numerous practical tips for breeding fish. Numerous colour photographs, black and white pictures and illustrations in line. 75s (post 4s 6d)

A Manual of Aquarium Plants
by C. D. Roe

Loose-leaf pages bound spirally. Profusely illustrated to show common and less common aquarium plants, which are arranged alphabetically by their generic names. Descriptions and cultivation notes are given for each species. 17s 6d (post 1s)

Aquarium Plants
by H. C. D. de Wit

Translation of a work from Holland written by a professor of botany. With chapters on growing water plants and on algae; floating plants; submerged plants. Notes on cultivation. Many illustrations; one colour plate. 35s (post 1s 3d)

Aquarium Techniques I and II
by A. O. Janze

Part I is titled Care and Equipment, and deals with choosing and making aquaria, lighting, equipment, setting up and maintaining aquaria, fish foods, pests and fish diseases. Part II (Fishes and Plants) covers coldwater and tropical fishes and plants with sections on breeding, feeding baby fish and cross-breeding. Some colour plates, many line illustrations. each part 12s 6d (post 9d)

Salt-water Aquarium Fish
by H. R. Axelrod and W. Vorderwinkler

A practical book on setting up and maintaining a tropical marine aquarium, with chapters on sea water, feeding salt-water fishes, their diseases and descriptions and notes about many suitable aquarium specimens. Many photographs in colour, some black and white. 63s (post 1s 6d)

Foyle's Handbooks
each 5s (post 8d)

Practical handbooks in hard glossy covers.

Aquariums	Anthony Evans
Goldfish	Anthony Evans
The Water Garden	H. C. Witham Fogg

The Life of Fishes
by N. B. Marshall

Written by a scientist specialising in fishes, this interesting book discusses their anatomy, physiology, behaviour and general way of life. Aspects of fish reproduction are explained and an account of the various habitats of fish is given. Colour plates, illustrations in line and half-tones. 63s (post 4s 6d)

Tropical Aquarium Fish
by A. van den Nieuwenhuizen

Sub-titled 'Their Habits and Breeding Behaviour', this sumptuously produced book is specially remarkable for the beautiful photographs in colour and black and white by its skilful Dutch author. 90s (post 4s 6d)

Tropical Fish in the Aquarium
by J. M. Lodewijks

A useful beginner's book with descriptions of common fishes accompanied by colour drawings. Line illustrations show various techniques and equipment. 16s (post 11d)

Your Book of Aquaria
by Anthony Evans

For the young aquarist. Instructions are given for making, stocking and caring for the aquarium to set the young beginner on the right road for trouble-free fish-keeping. 9s 6d (post 10d)

Any aquarium book in print supplied on request

When ordering please indicate your name and address clearly and enclose remittance. For addresses in London postal districts only deduct 1s from 4s 6d postage rate.

PetFish publications

554 GARRATT LANE LONDON S.W.17 **Phone LAKeside 2805**

TACHBROOK TROPICALS LTD.

244 VAUXHALL BRIDGE ROAD, LONDON, S.W.1

Telephone: VICTORIA 5179

ANGLE IRON TANKS

18×10×10 in.	£1 15 0
18×12×10 in.	£1 17 6
18×12×12 in.	£2 0 0
24×12×12 in.	£2 12 6
24×15×12 in.	£2 17 6
30×12×12 in.	£3 10 0
30×15×12 in.	£3 15 0
30×15×15 in.	£4 7 6
36½×12×12 in.	£4 5 0
36½×15×12 in.	£4 15 0
36½×15×15 in.	£5 15 0
48×12×12 in.	£6 2 6
48×15×12 in.	£6 15 0
48×15×15 in.	£8 15 0

HEATERS

Ex Ex Standard—25, 50, 75, 100w.	7 6
Ex Ex Superb—25, 50, 75, 100, 125, 150w.	10 6
Uno Regal—25, 40, 60, 75, 100, 120, 150, 200w.	9 6
Ex Ex Flexible—100w. only	19 6
Elephant—25, 40, 50, 60, 75, 100, 120, 150w.	10 6
Rena—35, 50, 75, 100, 150, 200w.	10 9
Wizard	8 6

COMBINED HEATER & THERMOSTAT

Ex Ex Dial-O-Matic—100, 150w.	£2 1 6
Ex Ex Preset-Matic 50, 100, 150w.	£1 4 10
Inter Pet Submersible 100, 125, 150w.	£1 15 6

THERMOSTATS

Uno Popular	10 0
Uno Pop/Neon	12 6
Uno Inside Control	15 0
Uno Outside Control	18 0
Uno Comet Top	15 0
Uno Comet Top Neon	17 6
Ex Ex Minor	10 0
Ex Ex Major	15 0
Ex Ex Sentinel	28 0
Elephant Standard	18 0
Elephant Key Set	18 0
Rena Top/Control	20 6
Rena Top/Control with Neon	22 6
Wizard 10 6, 12 6,	18 0

OUTSIDE FITTING THERMOSTATS

Constat Q.K./Neon	£1 5 0
Constat J.L./Neon up to 1,000w.	£1 14 0
Springfield	£1 5 0
Silk-seat	£1 2 0

THERMOMETERS

Ex Ex Dumpy	6 6
Hykro Spirit Thermometer	3 0
Uno Spirit Fish/tank	5 0
Floating Spirit	2 6
Uno Blue line	4 6
Uno Perspex Back Mercury	6 3
Spare Dumpy Rings	6
'Tim' outside fitting	12 6

STAINLESS STEEL METAFRAME

16×8×10 in.	£1 19 9
20×10×12 in.	£3 5 5
24×12×12 in.	£4 0 0
24×12×16 in.	£7 10 11
30×12×12 in.	£7 10 11

HALF REFLECTOR

16×8 in.	£1 0 10
20×10 in.	£1 3 4
24×12 in.	£1 5 1
30×12 in.	£1 11 3

FULL HOOD

16×8 in.	£1 16 0
20×10 in.	£2 1 4
24×12 in.	£2 7 4
30×12 in.	£2 18 11

STOW-A-LITE

20×10 in.	£3 2 5
24×12 in.	£3 18 4

BOW FRONTED BOOKCASE SETS

36×15×12 in.	£19 17 6
48×15	£32 0 0

BOW FRONTED WITH PLAIN STANDS

24×15×12 in.	£12 10 0
30×15×12 in.	£15 0 0
36×15×12 in.	£16 0 0
48×15×10 in.	£22 10 0

TWO TIER STANDS

18×10×36 in.	£1 17 6
18×12×36 in.	£2 2 6
24×12×36 in.	£2 7 6
30×12×36 in.	£2 15 0
30×15×36 in.	£3 2 6
36½×12×36 in.	£3 5 0
36½×15×36 in.	£3 10 0
48×12×36 in.	£4 5 0
48×15×36 in.	£5 0 0

VICTOR ALL OVER SHADES

18×10 in.	£1 2 6
18×12 in.	£1 5 0
24×12 in.	£1 7 6
30×12 in.	£1 12 6
30×15 in.	£1 17 6
36½×12 in.	£2 0 0
36½×15 in.	£2 5 0
48×12 in.	£2 12 6
48×15 in.	£3 2 6

ARBE PLASTIC AQUARIUMS

Bow fronted

18×12×11 in.	£8 5 0
23×12×11 in.	£9 17 6
24×15×12 in.	£12 17 6
36×12×14 in.	£16 19 0
36×15×14 in.	£22 10 0

FANTASY GRAVEL

Mottled Lavender, Mottled Green, Mottled Red, Mottled Primrose, Mottled Blue, Gloss Black, Matt White.
2 0 per 1 lb.
p. & p. 2 6

3-D BACKGROUNDS

For 18×12 and 18 in. tanks	12 6
For 24×12	15 6
For 36×12 and 36 in. tanks	25 6

PISTON PUMPS

Seakes Gdn. Fnt.	£7 19 6
Float Assembly	£1 10 0
Eheim 388	£9 0 0
Eheim (Single)	£11 15 0
Eheim Single (salt)	£12 15 0
Eheim (Double)	£16 19 0
Eheim Double (salt)	£17 19 0
Otter with fountain or waterfall kit	£9 17 6

AIR PUMP

Summit	£1 1 0
Model "D"	£3 3 0
Super Summit	£1 5 0
Montrose Minor	£1 1 0
Montrose Major	£1 4 0
Quiko Pump	£1 5 0
Mini Pump	£1 1 0
Fairy Pump	£1 5 0
Star	£2 0 0
Jnr. Zoobeko	£2 2 0
Zoobeko	£2 14 0
Silenta	£3 0 0
Biko (twin outlet)	£5 5 0
Rena	£2 10 0
Rena 100	£1 15 0

AIR PUMPS ACCESSORIES

Nylon clamp	1 0
Tubing clamps	1 4
T-pieces	1 0
3-way pieces	1 3
Small oblong diffuser stone	1 3
Stone with 12 in. stem	1 8
Square diffuser stone	1 6
Square diffuser stone with stem	1 10
Diffuser stems 12 in.	5
15 in.	6
24 in.	10
P.V.C. flexible non-toxic air tubing per ft.	3
Rubber air tubing per ft.	3
P.V.C. air tubing 60 ft. coil	7 6
Hyflo regulator valve	5 0
Hykro gang valves	3 6
Air Line Valves	3 6

AIR PUMP SPARE PARTS

Fairy Diaphragms	1 3
Fairy Air Chambers	1 9
Zoobeko Diaphragms	2 9
Biko Diaphragms	2 9
Silenta	2 6
Monarose	1 6
Rena Diaphragms 2 for	4 0
Summit Diaphragms	6

RUBBER SUCKERS

Knob type	3
Shank type	4
Double sided	4
Hykro Plastic	6

FILTERS

Windmill Premier Biological Filters (S) 18×10 in.	12 6
(L) 24×12 in.	15 0
Windmill Regent	10 0
Windmill Consort	19 6
Internal Corner	4 6
Gro-Wel Bottom	8 3
Hykro Jnr. Bottom	5 0
Hykro De Luxe	13 6
Dynaflo	£5 17 6
Slim Jim External	17 6
Klear King External	22 6
Gro-Wel Bubble up	35 0

FILTRATION ACCESSORIES

Brosiam Glass Wool	1 6
Brosiam Activated Carbon	2 0
Jaynor spun glass	1 6
Jaynor filter carbon	1 6
Dutam glass wool	1 3
Dutam glass silk	1 3
Dutam filter carbon	1 3
Dutam Aq. peat	1 3
Nylon filter medium	1 6
Stersayl	5 3
Dutam Filter Pads	2 6

CLEANING EQUIPMENT

Windmill Air Rejector	10 0
Windmill Hand Rejector	15 0
Aqua Vac Standard (Battery)	46 8
Aqua Vac Super (Battery)	56 8
Spare bags 5 for	4 0
Windmill Hand Rejector spare bags	1 6
Windmill Air Rejector spare bags	1 6
Windmill Hand Rejector spare bulb	2 4
Windmill Rubber Algae Scraper	3 4
Windmill Blade Algae Scrapers	3 0
Aluminium Algae Scraper	2 0
Hykro 3-in-1 scraper	3 0
Windmill Automatic Syphon	4 6
Windmill Fishtail Syphon	2 0
Rubber tubing for syphon per ft.	
Windmill Dip Tube 15 in.	3
Hykro take-apart sediment remover 12 in.	3 9
15 in.	4 0
Seeds Tongs	6 6
Planting Sticks	1 9

HEATER HOLDERS

Windmill Heater Holder	1 6
Heater Bracket	2 0
Uno Uni-clip Heavy Moulded Plastics	1 6
Spare Knob Suckers for heater holders	3

WHITEWORM CULTURE

Small 3 0 Large 5 0

NETS

Round Nylon nets:	
3 in. 1 2	4 in. 1 3
Green cotton nets:	
3×2 1 3	5×6 2 0
3×4 1 6	6×7 2 6
4×5 1 9	7×9 3 9
Breeders short wooden handles:	6×9 4 6
Comet Nylon nets:	
3×4 2 0	5×6 3 0
4×5 2 6	4×6 3 9
Brine Shrimp or Daphnia nets	
3×2 1 3	4×5 1 9
3×4 1 6	5×6 2 0
Wooden handles 6×9	4 3

BREEDING TRAPS

Windmill combined breeding and rearing	19 6
Hykro 3-in-1	7 0
Reliant 3-in-1	15 0
Gro-Wel 5-way American	28 6
Hykro fish breeders, fine and coarse	6 0

AQUAMASTIC

1 lb. tin	3 0 p. & p. 2 6
2 lb. tin	3 9 p. & p. 3 0
4 lb. tin	6 0 p. & p. 4 6
7 lb. tin	9 6 p. & p. 6 0
14 lb. tin	17 6 p. & p. 9 0

DUROGNOST

Water hardness testing kit	17 6
Spare tablets Pkts. of 10 Strength N.1 or N.5	2 0
Indicators each	6 0

COLORMETER P8

pH testing kit 37 6

MISCELLANEOUS

Hykro Aqua Sealer	2 0
Hykro Leak Stopper	1 3
Aquastop	2 6

OTHER FISH FOODS

Chlorella meal	2 6
Flakes	3 0
Wheat Germ Flakes	1 3
Shrimp Meat, Medium	2 3
" " Small	1 3
Turtle Food, Large	2 3
" " small	2 3
Infusoria Powder	3 6
Infusoria Tablets	2 6
Conditioning Goldfish Food Large	2 0
Conditioning Goldfish Natural, Large	1 3
Glow Tablets (30 tabs.)	3 6
Treat Packs (7 different foods)	8 0
Liquid small fry Livebearers	2 6
Baby Food Egglayers	2 6
Brine Shrimp Packs	8 6
Miracle freeze-dried worms	4 6

HARD COVER AQUATIC BOOKS

Illustrated Dictionary of Tropical Fishes (Frey)	70 0
Encyclopaedia of Tropical Fish (Axelrod)	65 0
Exotic Aquarium Fishes (Innes)	55 0
Tropical Fish as a Hobby (Axelrod)	35 0
How to keep & breed Tropical Fish (Dr. Emmens)	40 0
Saltwater Aquarium Fishes (Axelrod)	65 0
All About Tropical Fish (McInerny)	75 0
Color Guide to Tropical Fish (Axelrod)	45 0
Fishes in Colour (Gwynne Vevers)	12 0
Exotic Tropical Fishes (Loose Leaf)	150 0
Exotic Tropical Fishes (Bound Cover)	150 0
Freshwater Fishes of the World	84 0
A Manual of Aquatic Plants (Rae)	27 6
Tropical Fish in Your Home	25 0
Aquarium Plants (De-Witt)	35 0
Under the Sea (Burton)	25 0
Tropical Aquarium Fish (Nieuwenhuizen)	90 0
Tropical Fish in the Aquarium (Lodewijks)	16 0
Freshwater Tropical Aquarium Fishes (Hervey & Hems)	15 0

SOFT COVER BOOKS

Tropical Fish (T.F.H. Pubs.)	15 0
Electricity in the Aquarium (Warburton)	7 6
A Manual of Aquatic Plants (Rae)	17 6
Starting Right with Tropical Fish (Gannon)	6 0
Starting Right with Goldfish (Gannon)	6 0
All About Guppies (Axelrod & Whitehead)	12 0
Garden Pools (Paul Stanton)	6 0
Diseases (Rolf Geisler)	6 0
How to Keep & Breed Tropical Fish (Dr. Emmens)	32 6
All About Aquariums	12 0
The Educational Aquarium	9 0
Your Terrarium	6 0
Playful Turtles	3 0
All About Breeding Tropical Fish	12 0
Marine Tropicals	32 6
Breeding Aquarium Fish	10 6
Aquarium Plants	10 6
Aquarium Hygiene	10 6
Pond Life in the Aquarium	10 6

T.F.H. PUBLICATIONS 3 0 EACH

Platies and Moons
Tropical Fish Guide
Beautiful Bettas
Tiny Tetras
Beautiful Goldfish
Colourful Livebearers
Aquarium Water Chemistry
Colourful Egglayers
Tropical Fish Primer for Beginners

T.F.H. PUBLICATIONS 2 0 EACH

Ants
African Barbs
African Cichlids
Angel Fish
Aquarium Plants
Argentine Pearl Fish
Aquarist Repair Manual
Barbs
Beginning the Aquaria
Breeding Egglayers
Breeding Livebearers
Catfish
Cichlids
Danios
Decorate your Aquarium
Discus
Diseases of Tropical Fish
Dwarf Cichlids
Fancy Guppies
Goldfish as Pets
Gouramis
Guppies as Pets
Piranhas
Panchax Group
Pencil Fish
Platies as Pets
Rasboras
Seahorses
Siamese Fighting Fish
Swordtails
Snakes as Pets
Salamanders and Newts
Tetra No. 1
Tetra No. 2
Tropical Fish as Pets
Turtles as Pets
Frogs and Toads
Beginning the Terrarium

DITCHFIELD WONDER SERIES 9d. EACH

Garden Pool Construction
Tropical Fishkeeping
Goldfish
Popular Pets and Tortoises
Coldwater Aquarium
Stocking Garden Pools
Tropical Aquarium for Beginners

OTHER BOOKS

Aquatic Insects	1 6	Pond & Stream Life	2 0
Tropical Fishes	2 6	Garden Ponds	1 6
Live Foods	2 0	First Steps and Aquarium Keeping	2 0
Marsh Gardens	1 6	The Goldfish	2 6

FRY FOODS

Brine Shrimp Eggs	1 6, 2 0, 6 6, 12 6, 25 0 and (½ pint) 60 0
Biol Plankton Culture	2 6 and 5 3
Infusyl	2 6
Brosiam Fry Grain	1 6
Liquifry—Egglayers (red), Livebearers (green)	2 6

FEEDING ACCESSORIES

Windmill Floating	1 6
Windmill Feedwell Dry Food Feeder	1 0
Windmill Feedwell Live worm feeder	1 6
Windmill Feedwell Live and dry feeder	2 0
Floating dry feeders	1 0
Floating worm and dry feeders	1 6
Hykro four-in-one feeders Small 1 9 Large	2 0
Uno bowl feeder	1 6
Uno stick-on square	1 6
Floating dry feeder square	1 6
Ex Ex Micro Mazi	8 0
Worms Alive Auto worm feeder	9 0

WARDLEYS FISH FOODS

Vitalizer mix (8 foods in one)	2 3
Supremix Conditioner (Fine, Med., Coarse)	1 3
" " " (large)	2 6
Superba Homogenised Micro Pelleted Food (Fine, Med., Coarse, Ex. Coarse)	8 0
Vitaflare (Fine, Med., Coarse)	2 3
Hi-Glow "30" Colourfood (Fine, Med., Coarse, Community)	4 6
Fry Fare Guppy Food Lge.	2 6
Molly Fare Large	2 6
Fancy Guppy Food Ex. Large	4 6
Guppy fare Small 1 3 Large	2 3
Dried Daphnia Small 1 3 Med.	2 3
Salmon Eggs Small 1 3 Large	2 3
Liver Meal Small 1 3 Large	2 3
Beef Meal Small 1 3 Large	2 3
Fish Meal Small 1 3 Large	2 3
Crab Meal Small 1 3 Large	2 3
Brine Shrimp Kit	8 4
Tri Pellets	4 0
Hi Protone	4 6
Brine Shrimp Pellets	5 3

TETRAMIN FISH FOODS

Tetramin Staple Foods for Tropicals.	
Size 1	1 11
" 2	3 3
" 3	7 6
" 4	24 6
" 5	87 3
Large Flake	7 6
Tetramin Staple Food in Tablet Form	3 0
Tetramin Conditioning Food	4 3
" Colour Pride	4 3
" Growth Food	4 3
" Guppy Food	4 3
" Marine Staple Food (for Marine fish)	4 6
Anamin Staple Food for Goldfish.	
Size 1	1 10
" 2	3 10
" 3	12 6
Suregold 1 6 & 4 0	
Biol Plankton Culture 5 3 & 2 6	

ELITE FISH FOODS

For Tropicals	2 0 & 5 0
For Goldfish	2 6

FISH FOODS

Brosiam Tropical Fish Food	1 6, 2 6, 10 0, 17 6
Brosiam Bio-Vit	6d., 1 6
Brosiam Pond Fish Food	1 6
McLynns Tropical Fish Food	1 6, 2 6, 5 0, 6 6, 6, 17 6
Suregrow	1 6, 2 6
Datam Dried Daphnia	1 6
Datam Shrimp	4 6
Datam Ant Eggs	6d., 1 0
Datam Pond Fish Food	3 6
Exotic Flakes	1 6
Hykro Flakes	1 0
Hykro Natural Flakes	1 0
Hykro Shrimpmeal	1 0
Hykro Dried Flies	1
Hobby Fish Food	2 0
Hobby Leaf green flakes	2 0, 7 0
Hobby Yolk Flakes	2 0, 7 0
Hobby Fish Food (Breeders Pack)	7 0
Hobby 'Blue Daily'	3 0
Wunderbar	3 6, 6 9, 22 6

REMEDIES
Wardleys

Halamid Tablets (new)	4 0
Vitamin Tablets	3 3
Anti-Chlorine Tablets	2 6
Treasure Chest Neutraliser	3 0
Turtle Block Neutraliser	3 0
pH Test Kit—	
Junior	7 6
Senior	16 6
Bromthymol Blue pH Indicator	4 0
Aquatic Tonic (general tonic and remedy)—	
1 fl. oz.	3 3
4 fl. oz.	10 0
Anti-Chlorine Compound—	
1 fl. oz.	2 6
4 fl. oz.	8 0
Aquapurer (clears cloudy water)—	
1 fl. oz.	2 6
4 fl. oz.	8 0
Fungus remedy (colourless and stainless)—	
1 fl. oz.	3 3
4 fl. oz.	10 0
Sprout. Plant food	2 4, 8 0
Methylene Blue	4 0, 10 0
Germacin Combats Disease in Aquariums	4 0
Superchlor Removes Chlorine instantly	5 6
Al.G. Free Prevents Algae	8 0
Buffer Tablets. Maintains neutral water	6 6
Fungi Free. Two-way treatment for fungus infections	6 6
All Clear (Algicide)	6 0, 12 0
Supertonic	6 6

Tetracare
at 4 6 each

General Tonic. As a regular tonic in the Aquarium
Florspride. Aquarium plant and water softener.
Blackwater tonic. Reproduces natural tropical soft acid water conditions in Aquariums.
Fungistop. Cures body fungus, fin and tail rot etc.
Contra Ich. Cures White spot, shimmy and Costia.
Contra Chlorine. Neutralises chlorine contents of fresh tap water.
Meersalz, for making sea water for Marine Fish.
4 lb. bag makes 10 gals. 17 6 plus 4 6 p. & p.
2 lb. bag makes 5 gals. 9 6 plus 3 0 p. & p.

Brosiam

White spot cure	2 0
Fungus cure	2 0
Plant Fertiliser	1 6
Hykro Nutra Vitalisers	1 3
Clarox water rectifier	2 10
Clarox Tablets	1 0
Liquitox for Fungus and Fin rot Small 2 0, large	4 9
Vivo Rejuvenating tablets	3 9
Datam Aquarium salt	1 3
Hobby Red & White Cure	4 0
Coral Oxygen tablets	6
Suregrow Disease Solve	2 0, 6 0
Turflo	3 6
Tropafin	3 9

ESTIMATED APPROX. POSTAL CHARGES

Aquariums, Stands, Gravel, Mastic and Rockwork at owners' risk. Carriage at cost invoiced after despatch 2s 6d for orders up to 10s 0d; 4s 0d up to 20s 0d; 5s 0d up to 40s 0d; 6s 0d up to 60s 0d

TACHBROOK TROPICALS LTD., 244 VAUXHALL BRIDGE ROAD, LONDON, S.W.1

PRINTED BY ADLARD & SON, LTD., BARTHOLOMEW PRESS, DORKING