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Comments and Quotes

Simplified Marine Fishkeeping • More about Prolactin • The Wonder Horse • Catfish Taste all Over

The 'Natural System'

WE are often asked if it is possible to keep a sea water aquarium without the use of special equipment in the same way that a freshwater aquarium can be kept. The short answer is yes, but in this unqualified form it is not a particularly helpful answer.

For example, an ordinary angle-iron tank can be used for sea water if you don't mind that it will rust away at a rate twenty times faster than that with usual employment. For long-term economy and the sake of appearance it is therefore sensible to choose a plastic-coated or a stainless-steel tank. So there's one 'special' piece of equipment it is unusual to do without.

What about the other 'special' items? Well, one could manage without a hydrometer simply by marking the water level on the side of the tank, but marks do erase and undoubtedly it's a less accurate system of salt control. We have not heard of anyone dispensing with an aerator or some form of water-disturbing device, but apart from these the marine tank equipment need not be more elaborate than for the conventional coldwater or tropical freshwater aquarium.

Highly successful tanks have been and are being kept in this way, which seems destined to become known as the 'natural system'. However, one item that is also necessary with this is a lot of 'know-how', something that cannot be bought, whereas power filters, ion-exchange resins and ozoneizers can and perhaps not a guaranteed route but a surer road to success and to ultimate achievement of 'know-how' for the beginner.

More about Milk Hormone

FURTHER light is being shed on the part played in the lives of fishes by that interesting hormone prolactin. It is known to be responsible for the production of the skin secretion by discus fish, on which their fry feed, and there is now good evidence for the necessity of prolactin in those fishes that are able to live in both freshwater and sea water (such as Poecilia and Fundulus). Without prolactin the fishes are unable to tolerate freshwater conditions and can live only in saltwater.

In these fishes, too, the action of the hormone is at least in part a result of effects on the skin, and investigations of this and other hormones of the fish pituitary gland are being made in the Zoology Department of the University of Leeds. One fish that is receiving attention in these studies is the common eel. The work was described by Professor J. M. Dodd in an address given to the Fisheries Society of the British Isles at its inaugural assembly at the London Zoo in October.

The Wonder Horse

NOW that the British Aquarist's Festival is over for another year and the (gold) dust over the selection of a 'champion' for 1967 has settled, it would seem the right time to take up the matter of the propriety of the
Anthony Evans and Staff of PFM give Seasonal Greetings to all our readers

No, if beasts there must be, the proper answer is to have best barb, best cichlid, best catfish and so on. Then there might emerge a champion in each group, although we doubt it. Anyway, let's be appreciative of the jollity it all adds to the show scene, but let's not have too much of the Turf mentality in fishekeeping or we'll end up with bookies' stands round the walls of our fish shows.

Catfish Taste All Over

HAVE you ever noticed the behaviour of your catfish when food goes into the tank? Sometimes it is obviously alerted by the other fishes present in their scavenging for shares. But even if the catfish remains impasive at first it is not long after food reaches the bottom before it begins excitedly 'nosing' around, turning this way and that before finally coming into contact with the food.

How does a catfish 'home' on to food? Observation suggests that sight is playing little or no part, and experiments with blind catfish verify this. It seems to be a form of taste that is responsible, although not via the fish's mouth, and is set off by particles of food dissolved in the water and reaching the fish in even the minutest concentrations. The 'whiskers' or barbels are particularly sensitive 'tasters' of food in the water, but for at least one species of catfish, the American bullhead, scientists have shown that the skin of the fish over large areas of its body also bears these 'taster' structures. It's as if we could perceive food in our surroundings without seeing or smelling it by a sense of taste from the skin.

The taste triggers the searching body movements, patterns of S and figure 8 manoeuvres, that always lead the fish in the direction of the greatest taste sensation, i.e., towards the food. Another finding from the study of the behaviour of these fish was that deterrents in the water soon lose effectiveness. When this happens several months in fresh water were required before recovery took place.

Fish 'Library'

I WAS very interested in Arpee's suggestion of a 'lending library' of fish (PFM, November), but I do not see how any dealer could cope with the problem of disease that would be raised. However, healthy-looking fish, it may well have come out of a 'library' user's tank that is going to break out in white spot 24 hours later. My own dealer quarantines fish for a full period before resale, including those brought back for exchange, and I know this is not just an idle statement. It might be possible to have just a couple of tanks kept for this purpose alone, but even then the problem of serving from them and then serving immediately from a quarantined tank would have to be solved. It might get a few larger fishes circulating, however. These always seem to be very scarce.

London, N.W.2

D. MARSH

The success of a fish 'lending library' (Personal Comment, PFM, November) would depend, it seems to me, on Arpee's own words on the fact that local rules were 'fair and sensible'. I have overheard many an argument in shops on the subject of a fair price for a couple of large fish being traded and, in the past, I have myself been disappointed at an offer from a dealer for fish that I had had for some months and grown up to a good size. But the explanation of this seemed reasonable, I thought. Nobody forced me to buy the fish in the first place and it doesn't seem sensible to expect the dealer to pay for the fact that I had had a months' pleasure out of the fish, during which time they were growing larger. I was also told, on this occasion, that it can be a risky business taking in the odd large fish. Not all fishekeepers are very expert with the catching net. Nor are all aquarists very skilled in tying up a polythene bag to allow the fish enough air, or even very careful about keeping the fish sufficiently warm in transit. There is also the fact that larger fishes often come from tanks in which they've been living for...
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LETTERS

Continued from page 346

months, often in very old water and they do not always take kindly to their new 'home'.
I also feel that some fishes would have a pretty miserable life being shunted round from one 'library'

to the next.

Torquay, Devon

R. CRANLEIGH

Pond in Trouble

I have encountered a very serious problem in my
garden pond this year. The pond is quite large, well
stocked with weed and lilies and contained two pairs
of golden orfe between 6 and 8 in. in length. Early this
summer, the fish showed obvious signs of distress and
when I managed to net one of them, I noticed a nasty
looking wound about 1 in. in diameter just behind the
dermal fin. The wound extended downwards almost to
the backbone.

I took the fish to several people who know a good
dead about fish but although none of them had ever seen
anything like it before, they suggested various causes,
from Columnaris to water beetles. All of the orfe were
similarly affected but when netted they displayed no
obvious lack of stamina or other ill-effects. However, I
decided to destroy them rather than prolong suffering.

After a period of 3 week's hot weather, my pond was
suddenly alive with water beetles. I consulted a reference
book on them and discovered that they were the larger
species of water beetles (Dytiscidae). The book stated
that this species possess a sucking beak with which they
pierce their prey and suck its juices.

I tried strong solutions of salt and permanganate of
potash, both of which failed to kill the beetles and so,
in desperation, I carelessly emptied the pond and killed
all of them in disinfectant. I also destroyed all of the
weed and lilies and removed all mud and stones, the
latter being steeped in disinfectant. The pond was
thoroughly scrubbed and allowed to remain dry for
2 months, after which I introduced fresh compost and
new weed and lilies (from a dealer), which were soaked
in warm water prior to planting.

As I was unable to obtain orfe of the size I wanted,
the pond has remained empty of fish but much to my
horror, I recently noticed two beetles! None of my
neighbours who have ponds (one of which is next door)
have been infested by beetles. Although these beetles
can fly, there is no water of any size within a radius of
at least 3 mile from my pond and there is no sign of
beetles in this water.

I would greatly appreciate any help or information
which readers could give me in connection with my
problem, particularly whether there is anything I can
do, or use to kill the beetles without harming other
pond life.

Stratford, S.R.W.16

C. J. ACLAND

Fish House Heating

I refer to the article 'Running a Fish House' in the
November edition of RyM. In the article, it was stated
that paraffin heating is quite commonly used in the
heating of fish houses. I would say that this statement
was wrong for the following reasons:
1. An oil film is formed on the water surface because
   of the furnaces in the atmosphere.
2. If an air pump is employed, foul air is forced into
   the aquarium.

It is thus my opinion that the heating of fish houses
on paraffin is undesirable.

Leven, Fife

JAMES WEBSTER

May I say how much I enjoyed the two articles on
fish houses, in the October issue of RyM. This kind
of article is very useful to people thinking of building a
fish house, enabling them to avoid the pitfalls experi-
enced by others pursuing this venture. If more articles
on this subject could be put at the disposal of readers
I feel sure that it would be of benefit to our hobby.

Advice such as materials best to use for building a
fish house, and their approximate cost, methods of
building, shutting out excessive light, advantages of
overhead or side daylight, size for ease of maintenance,
sighting of the fish house, methods of heating, insulating,
running costs with regard to relative size and insulation
—given such information aquarists would be able to
construct the best type of fish house to suit their needs.

I was very taken with the idea of under-floor heating
by electric cable. Question is, what happens if the heating
cable has a blow-out under 6 in. of concrete?

Southall, Middlesex

J. A. WHITE

Pressure in Bags

Your note about floating fishes in polythene bags
(RyM, November) has made me think of raising a
query that I have often thought about. This concerns the
practice of some dealers of blowing up plastic bags
containing fish before sealing the bag, so that it has a
mass of gas under some pressure above the water. Is
not this pressure a source of possible harm to the fish
exposed to it?

Norwich

K. PRIEST

No. The pressure involved is quite low and gives an
advantageous slight increase in oxygenation of the water.
A general procedure followed in commercial transportation
of fishes in these bags is to use a minimum volume of water
and maximum volume of gas (often pure oxygen is used)
and in these circumstances the fish survive long journeys
very well.—ED.

Carrying Fishes

Mr. P. Turnworth's difficulty (RyM, November)
would be solved if he made himself a small insulated
carrying case holding jars for his fish purchases. If he is
without time to make one of these there have been
advertised in your pages some really excellent carrying
cases complete with jars, and I can say that these are
really beautiful jobs.

Birmingham

P. MEE

F.S.A.S. Handbook

Encouraged by the tremendous success which
the second edition of the HANDBOOK of the Federation
of Scottish Aquarist Societies enjoyed, the Councill 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 organisations such as the British Killifish Association and the Fancy Guppy Association and to include details of the associations overlooked in the last issue. It is also intended to continue a section on programme aids, giving information on films and slides which are available for hire to societies. The Pet Shop Directory, it is hoped, will be enlarged, particular emphasis being placed on those shops which retail tropical fish in any part of Britain.

Such an undertaking cannot be accomplished without the cooperation of individual aquarists, active societies and pet traders throughout the United Kingdom. To this end a questionnaire has been sent to club secretaries in the hope that their society will be prepared to help us obtain the necessary preliminary information. Entries in the Pet Shop Directory will be made without charge as we consider this a service to readers and not primarily a service to dealers. Traders who wish to have advertising space may have details on request.

Last year’s HANDBOOK was printed to a very high professional standard and was circulated to some 600 aquarists in Scotland. In addition, 200 copies were also sent to aquarists in England, Wales, Ireland, Scandinavia and America and were well received in these countries. We feel that the new edition will be of interest to all aquarists and order forms can be obtained from me. The cost will be 3s 6d plus 6d postage. Remittances should be included with the order and a receipt will be sent. It is regretted that further orders cannot be placed after publication.

Should societies hold, or know, of any other society which holds, an annual Open Show, please furnish us with details which will then be printed in the HANDBOOK, no charge being made.

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.

27 Watton Street, St. Albans, Herts

ROBERT G. FERGUSON
Hon. treasurer,
Federation of Scottish Aquarist Societies

The Shoeburyness Haul

MEMBERS of this Society, whether particularly interested in marine biology or not, tend to take an interest in any activity which involves zoological field work. I know that I will be asked at least one question as a result of a notice printed in your November edition; it concerns the International Marine Study Society’s visit to Shoeburyness, where they caught ‘well over 200 fishers’.

The question is, does PETFISH MONTHLY know why they caught them? With the added thought, what did they do with them? Was it a question of a population study, simple fauna list, or what; did they return them to the sea?

M. J. VOSPER
Director,
South London Field Studies Society

Prize Letters

TO the writer of the letter judged by the Editor to be specially worth reading among readers’ letters, PETFISH MONTHLY will award a prize of an item of aquarium equipment.

Next month’s prize: An under-gravel filter.

PETFISH MONTHLY will be glad to have your experiences, comments, suggestions etc. in letters on any matter associated with fish-keeping. Write to the Editor, PETFISH MONTHLY, 554 Garratt Lane, London, S.W.17.

We did not know the answer to this and a copy of Mr Vosper’s letter was sent to the I.M.S.S., who have supplied the following reply:—

We did not know the answer to this and a copy of Mr Vosper’s letter was sent to the I.M.S.S., who have supplied the following reply:—

WITH reference to Mr Vosper’s letter regarding our collecting trip to Shoeburyness, we would like to point out that it was a purely private excursion, and was only mentioned as Society news because of the exceptional number of specimens captured.

However, the answer to Mr Vosper’s question is that this was the purpose of our going to Shoeburyness. As to Mr Vosper’s thoughts, we did exactly what most aquarists would do, i.e. put them in tanks. There was no question of a ‘population study’ as neither of us has a clue as to what this means. With such an itinerant creature as a fish in such a restricted area, what purpose would it serve anyway? (Note: definition of ‘restricted’—there is an army firing range on either side.) As for a ‘simple fauna list’, we are only interested in marine fauna, and have never encountered any ‘simples’, whatever or whoever they may be.

Seriously though (sorry, Mr Frost), the fishes that we caught were made available to members of I.M.S.S. for their own use, although some were sold outside the Society in order to boost the funds. In case Mr Vosper is worried about us upsetting the ecology of the area, we must add that we left an uncountable number (it must have amounted to several millions) of fishes slowly boiling to death in the pools.

TERRY HALL
Gerald Jennings

Wanted

AS a complete newcomer to the hobby of tropical fish-keeping, may I ask if any of your readers or club groups have any unwanted copies of old magazines about fish-keeping or any other literature or colour pictures dealing with tropical fish. I will gladly refund any postage charges incurred and reply to any letter received.

P. RIDDLINGTON

22 St. Audries Road,
Upper Norwood,
London, S.E.19
When Fishes Sleep

By DAVID GUNSTON

Do they sleep at all? Most certainly, although it might not be quite the same as the human's nightly oblivion.

It is commonly assumed by many people that fishes do not sleep. Of course, it is not difficult to see how such an odd belief arose. In the dim, unscientific past, people looked at fishes, saw no obvious ears and therefore assumed fishes could not hear. Similarly, when they saw that fishes had no eyelids so that their eyes could not be closed like our own, and those of birds and some other animals, they not unnaturally assumed that fishes did not sleep, either.

Certainly, some observations of more recent origin have tended to support this view. Fish watched in tanks and aquariums appeared to go without sleep. A grey nurse-shark in an aquarium in Sydney, Australia, is said to have kept on the move—apparently without sleep—for 6 years, swimming over 200,000 miles in the process.

The truth is, nevertheless, that all fishes do sleep, at least for some part of their lives. Their concept of 'a good night's sleep' may not tally with our own, for perhaps only a few minutes' respite will enable them to keep going for another 24 hours.

Some fishes sleep much more than others, and the habit varies not only amongst different species, but also with changes of environment, water temperature and the length of the period of daylight.

If some fishes manage with what seems to us the very minimum of sleep, others like several hours' motionless rest, usually on the bottom. The mere fact of eyes closing or not closing has nothing to do with it. Human beings may close their eyes for sleep, but they have no ways of shutting their ears, and yet they manage to sleep soundly through all the hubbub of a big modern city with a large volume of noise still impinging upon their ear-drums.

Similarly, fishes may be sound asleep, unseeing and unhearing, though their eyes still present to us on the outside the normal seeing appearance. Whatever we are, whether a human, an elephant, a bird or a fish, when we sleep our minds are temporarily withdrawn from the outside world.

Although a fish's eye is fundamentally very similar to our own it lacks true eyelids; this is simply because whereas we need lids constantly to moisten and clean the surface of our eyeballs in contact with the dirt and dust of the air, a fish has its eyes naturally and constantly lubricated by the water in which it swims.

This is vividly illustrated by the case of the four-eyed fish Anableps, which lives in Central America. Possessing eyes divided into two sections, one for seeing under water and one for seeing in the air, it lies habitually on the surface for hours on end with the upper half of each eye clear of the water. But this exposed portion of the eyes, although adapted for vision out of water, has no eyelid arrangement, so the poor fish has to keep ducking its head beneath the water every few minutes to freshen up the exposed section of its eyes!

The time is a long way off yet when science knows all the answers to the mystery of sleep, but we do know it involves changes in the nervous system. The ancient view that sleep came when the accumulation of fatigue products in the blood stream reached a certain level has long been discounted, partly from observations of Siamese twins. These inevitably share a common blood system, yet one can sleep while the other remains wide awake. So whilst fish sleep may for short periods be as deep and
Transatlantic TOPICS

THROUGHOUT the year both the British Isles and the North American continent share many feast days and holidays, though we often don't celebrate the same things! An American lady I met in the U.S.A. couldn't understand that we ENGLISH didn't celebrate their Fourth of July! I'm not surprised that we don't celebrate Independence Day over here!

One holiday we have in common is that of Christmas, the time of the year when our thoughts turn to presents, winter sports, family gatherings or mistletoe, depending on what age group we hail from. Aquarium Societies in the States usually hold a Christmas Party, not only for their membership but more particularly to entertain those long-suffering, non-fishkeeping relatives. With plenty to eat and drink the 'unenlightened' get the opportunity to meet those folk who have just been names before, get a chance to see why dad or big brother, husband or uncle, are so keen to jar their fish and dash off to a fish meeting.

By JIM KELLY

This is good public relations, ensuring better co-operation from the aquarists' family and perhaps an odd new member to boot! It is an idea that clubs this side of the Atlantic could copy. The party needn't be a lavish affair.

Most of the food and drink could be provided by the members. Why not make it a condition of admission that everyone brings something to eat, and make the fish Table Show that night consist of all kinds of odd classes, just for the fun of it. 'The guppy with the largest body spot,' 'the flattest fish,' the list is endless, and so is the fun in compiling it.

If your Society suffers from that aquatic disease 'backlash' hold a bring and buy sale, a raffle, anything that will bring in a few shillings to buy prizes and presents; local traders will usually oblige with a little something. The effort expended will bring its own rewards and, who knows, that 'spirit of Christmas', when even my Bank Manager manages to smile, might just last the Society throughout the following 365 days.

After all, it is awfully hard to roll the tongue in criticism after forming those magical symbols... A Merry Christmas! To hobbyists in both the New World and the Old I wish just that.

***

The 'Roaring Twenties' spawned many a crazy stunt, notable amongst which was that of swallowing live fish in the pool. However, the practice was usually destined for execution being the common goldfish. Now it seems that this stupid idea hasn't completely roared out, at least not in one part of Nebraska.

A live fish-eating contest was promoted by a local pet centre as a

When Fishes Sleep

continued from the preceding page

As complete as human sleep, it is rarely enjoyed for very long periods without a break. The need for immediate sleep can swiftly be out-ridden by external factors more readily than in the human world. Fishes which prefer to sleep in total darkness will go on swimming if they are still hungry. Sea-trout and others, dozing perhaps after dusk, will become active as the moon rises and feed happily in the moonlight. Sleeping grey mullet have been known to be immediately woken by artificial light, to re-form their schools and swim on as if nothing had happened.

While the majority of fishes probably sleep resting on or close to the bottom, some will take up a somnolent posture suspended in the water. Flatfish and one or two other species with unorthodox habits regularly sleep on their sides on the bottom, often deep in mud or sand. Lampreys attach themselves to a stone when wanting to sleep in a swift current.

The general, but by no means invariable, rule seems to be that inland and coastal fishes prefer the bottom as a bed, whilst open sea and the larger oceanic fishes usually sleep suspended in mid-water. A few fishes, like the basking shark, and the opah or moon-fish, sleep on the surface. Basking sharks lie with the dorsal fin and part of the back above water, and sometimes they will doze side or even belly uppermost. There is no doubt that for much of the time they spend basking in the sun, they are enjoying sleep.

Unorthodox sleeping positions are the exception rather than the rule with fishes, and do not include the variety found in other animals and in the human. Trigger fish like to sleep head downwards, and most of the wrasses prefer to turn on their sides. One small Bermuda wrasse, known as the slippery dick, can be said to pull the covers over its head when going to sleep. It dives slantingly into the soft sand on the bottom, gives a few powerful wiggles with its tail, and immediately disappears from view. Even in a tank it is hard to detect the little volcanic peak of sand, gently rising and falling as the fish breathes, which marks the spot where its Gill-openings lie hidden. It can be induced to perform this act if placed in a darkened room even in daytime.

Oddly enough, sudden light or noise, or the pangs of hunger, may wake a sleeping fish faster than touching it. Many a soundly sleeping fish in an aquarium can be gently prodded without waking it. There seems some evidence, too, that the practice of tickling trout may include the simple factor that the fish caught so readily and amazingly may be simply sound asleep!
Keeping the Trigger Fishes

By H. R. LUBBOCK

There are many different species in the trigger fish family (Balistidae), some of which find their way into aquarium shops. Perhaps most commonly imported is the Picasso trigger (Rhinecanthus aculeatus). Triggers are very widespread, occurring not only in tropical regions, but also in temperate waters: Balistes carolinensis occasionally ventures as far as Britain, though it is more common around the Canary Islands, and in the Mediterranean, where the sea is generally warmer.

The characteristic body shape of the trigger fishes is roughly that of a diamond; the skin is rather coarse (that of the closely related file fishes was formerly used as an abrasive). The eyes are placed about a third of the way along the body, and this gives them a very large looking head, as well as the appearance of having a hot potato in their mouth! The mouth is in fact small; the teeth, however, are fused into a beak, thus making the mouth a formidable weapon, not to be underestimated.

These fishes' main claim to fame is undoubtedly their trigger mechanism: this is a development of the spiny

A trigger fish with the dorsal fin 'trigger' showing conspicuously...
or hard dorsal fin, and consists of three spines, one large, and two smaller. When the trigger fish is frightened, or simply when it "goes to bed" in the evening, it swims into a hole in a bit of coral and jams itself in by erecting its 'trigger', the main spine of which cannot be lowered unless the two smaller ones are put down first. This means that once a trigger has jammed itself in, it is practically impossible for it to be removed against its will.

A fairly large, soft dorsal fin is also present, as well as an anal fin of the same size, and these are both used a great deal when swimming. Sometimes with larger specimens it looks as if the fish is using these alone to propel itself. The gill openings are very small, and are situated just above the pectoral fins.

Triggers are fairly hardy, and, because of their coarse, rough skin, have the added advantage that they are unlikely to cut or scratch themselves and become affected by fungus etc.

When it comes to setting up an aquarium for triggers, the larger sizes are advisable, since triggers can grow quite large (actual size depending upon the species). It is possible, however, to dwarf them by keeping them in a smaller tank. The inside decoration of the aquarium should include a few hiding places, made from rocks and coral, to make the fish feel at home. Triggers can be safely kept with other fishes, as long as these are not too small. They are, on the other hand, rather unpredictable if kept together; whereas one pair might agree well together, another pair might be constantly fighting.

Triggers are carnivorous and will not eat any food with a plant content; neither will they eat dried foods. Their powerful teeth are capable of crushing crab shells etc., and it is therefore inadvisable to keep them in the company of any invertebrates, as these are usually eaten fairly quickly. (Sea anemones, of course, are not eaten.)

In their natural surroundings, trigger fish feed on, amongst other things, crabs, shrimps, living coral, sea snails and small fishes, a large one even being able to eat a sea urchin by first biting its spines off and then breaking its shell! Because of this wide range of acceptable foods, triggers are generally easy to feed. They can be given most live foods, and will eagerly accept bits of crabmeat, shrimp, scallop and mussel. If it is possible to obtain live shrimps or prawns from an unpolluted part of the coast, these make a good addition to the trigger's diet.

Triggers are thought to be some of the most intelligent fishes that exist: they become very tame after a few weeks in captivity, rushing up to the surface at feeding time. They will live in an aquarium for several years, provided they are properly looked after.

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**Personal Comment**

by ARPEE

I must confess to a very strong personal preference for natural and unadulterated things. There is only one time each year when you can get fresh blackberries from the hedgerows; alone, stewed, they have no equal, but they deteriorate into mediocrity when crammed into a pie with wretched apples which one can get at all seasons. So with fish.

With so many genera to choose from I honestly wonder why there has been so much misdirected effort in selective breeding. The long-finned angels look abominable and the queer things which have happened to the guppy are legion. I am not anti-aquarium or -guppy by any manner of means, but I would ask breeders of the 'fancies' of both to state clearly what their researches have really achieved by way of enhancing the dignity of either of these fish. The guppy, in particular, has in my eyes been reduced to a mere plaything and a wonderful source of revenue for the most successful practitioner of the grotesque. I look with pity on some of these wonderful little fish with gargantuan tails which they can barely drag through the water and wonder what their creators would feel like with ears a yards long.

On the question of colour I feel very much less strongly; the achievements here have been great, and progress in the platy and swordtail area have been most pleasing. It is quite true that modern breeders are not solely responsible for development of the bizarre. The Oriental preoccupation with the goldfish gave rise to horrible things like the lionhead and the telescopic-eye, to which I would never give tank room. In recent years sanity seems to have broken through somewhere and the koi carp has been evolved. This is a beautiful and well proportioned creature which could hardly offend anybody. Is it too much to hope that similar good taste will permeate to the tropical world?

I believe that any arguments in favour of developing the grotesque based on increasing our knowledge of genetics are rather spoiled by the fact that similar conclusions can be reached by breeding fruit flies. If this is not completely so I do wish that less extreme features could be developed; that the target effect should be one which is in keeping with natural symmetry rather than quite arbitrary considerations. The very least of good manners and taste would, to me, guarantee that no fish bred should ever be at serious practical disadvantage as compared with its forebears. Long-finned fish in mixed tanks have a terrible time of it, and I often wonder how they retain their popularity in face of the tendency of tiger barbs to take two guineas mouthfuls whenever the opportunity offers.

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I hope to allot a 'middle' section in future Comments to remarks on points raised in readers' letters, which have either been published or have reached me privately. So many tempting assertions or questions get into the Letters section of PnM that only the widest themes can be developed in that part of the magazine in succeeding issues. I hope to take some of the unanswered or partly
Le thème de cette année est la communication.

Communication

C'est un vecteur essentiel de l'éducation et de la formation. Elle permet d'échanger des idées, des connaissances et des expériences qui contribuent à l'acquisition de compétences professionnelles. La communication efficace est un facteur clé de la réussite dans tous les domaines de la vie. Elle permet de construire des relations de confiance, de résoudre les conflits et de promouvoir une culture d'entreprise dynamique.

La communication peut être orale ou écrite, mais elle doit toujours être claire, précise et respectueuse. Il est important de se préparer à l'avance et de s'adapter aux situations. Il est également crucial de prendre en compte les différents canaux de communication disponibles, tels que les réseaux sociaux, les blogs ou les webinaires.

En conclusion, la communication est un aspect crucial de la vie quotidienne. Elle nécessite des compétences techniques et des capacités personnelles. Il est essentiel de continuer à se former et à s'adapter aux évolutions des technologies et des modes de communication. La communication efficace est un investissement qui rapporte des avantages à la fois individuels et collectifs.
Meet the Judges

Mr J. Stillwell (F.B.A.S.)

PORTSMOUTH is the home town of F.B.A.S. judge Mr J. Stillwell and for 15 years he held office in that city's Aquarist Society, most of the time as chairman. He is currently the Society's F.B.A.S. delegate and also is a member of the British Aquatic Study Society.

By profession Mr Stillwell is a lecturer in mechanical engineering. Although additional lecturing to aquarists' societies and numerous judging commitments leave him little time to spare, he keeps up as well a strong interest in railways, which first caught his enthusiasm 35 years ago when he was about 7 years old. Fishkeeping he also tried as a boy but his most serious application to the hobby has been over the last 20 years, with about 7 of those years as a qualified judge.

In his fish house he specialises in barbs, cichlids and Bristol shubunkins ('Singletails—as we should call them now?' he commented to P.F.) Mr Stillwell thinks it important for a judge to have kept as many different kinds of fishes as possible to improve judging capabilities. Currently he is trying to breed the pumpkin-seed sunfish (Lepomis gibbosus), for which no aquarium breeding record is known, and he is very hopeful for future success with this fish.

Mr Stillwell's keen interest in technical matters has led him to make a detailed study of genetics, which is one of his society lecture subjects. His wife shares his interest in fishes and acts as his secretary and keeps his judging sheets at shows. A change in the fishes he sees that Mr Stillwell comments on regretfully is a deterioration in quality of livebearers, notably in eheimdals and mollies. This he believes to have occurred because these fishes have not attracted specialist groups as has the guppy, for example, so that the tendency is for them to become left to the gercy of beginners and less-experienced aquarists.

Mr Stillwell is opposed to hobbyists having a commercial attitude to fishkeeping and has strong reservations about the emphasis on cash awards, believing that other tokens and recognition of successes are much to be preferred. One of his confessed enjoyments is the debating of controversial points with other aquarists.

To aquarist fathers with daughters Mr Stillwell strongly recommends membership of a society, jokingly saying that through his society his daughter met her aquarist husband and the extra room at home when she left to get married enabled him to have even more tanks!
BRITISH AQUARISTS FESTIVAL 1967

The Show Scene

By CAPT. L. C. BETTS

Through the Eyes of a Coldwater Man

The one who has seen fish shows of all kinds and sizes over the last 40 years, my impending visit to the sixteenth annual British Aquarists Festival at Belle Vue, Manchester, had not aroused in me any excitement. It was only being left the sunshine of London behind for the rainstorm that greeted us on leaving the train, the feeling was one of just another promise to carry out. However, this all changed and I was caught up in a spirit of enthusiasm as I mingled with many 630 townsfolk who had known but temporarily forgotten and many a same which took on a new significance as the owner gave me a warm welcome.

The Hall housing the exhibition was 200 ft. by 80 ft. and the 47-odd tanks and 75-odd exhibits affiliated to the Federation of Northern Aquarium Societies with their 200 plus exhibitors adequately filled it. Perhaps 'filled' is not quite the word, for many original and artistic set pieces did more than just occupy space; they positively challenged the viewer to read round.

Up north they have no doubts about what a fish show should be, and upon uniform tanks housing projected-looking fishes, all looking the same, is not their idea.

On the contrary they believe the tank should be displayed with all the originality that the exhibitor can summon and whilst the individual fish entries are limited to prominent tanks, there is no limit to the way the tank itself can be designed. To maintain some sort of community and cohesion, each society is responsible for its own theme or idea, which enables that society to demonstrate tropical fish with coldwater fish and goldfish with discus fish, setting off the whole scene with some theme or idea attractive to the lay public.

Passing round the show we could explore the piscatorial wonders of Robinson Crusoe's House of Straw, an imaginary Rock Cave and sundry other structures not normally associated with fish exhibitions. From the show secretary's point of view, this conception is excellent, for once the entries are in and closed, the actual putting up of the show is done by the various Societies and all the nightmares of tanks and staging and the erection thereof is neatly by-passed, not to mention tank filling, the provision of adequate aeration and the maintenance and protection of the fishes themselves during the show. From the public's point of view there is much more to see (or so it seems) and each exhibit gets the viewing it deserves. As opposed to the serried ranks of tanks layout where a viewer can be in and out in 10 minutes, at Belle Vue a pleasant 2 hours can be spent in leisurely comfort.

So far as the judge is concerned it is sheer hell. To judge one class alone can mean covering the length and breadth of the hall four times; at least for goldfish judges it is. Once round the hall to assess the overall quality of the class, once round to point the fish individually, once round to check the placings and once round to get the judges' sheet in to the secretary. Of course, if you miss an entry on the way round, this means a few extra hundred feet to cover. My co-judge Maurice Cluse and I consider the least that the organisers could do is to provide the judges with roller skates and secretaries. (All right Mr Cooke, I am only joking—I will settle for a secretary!) In fairness to the tropical judges, it can be said that they showed no sign of exhaustion, but perhaps they trained with Manchester United.

A unique feature of the show this year was the Champion of Champion's class in which only fishes which had won the best fish in the show awards elsewhere were eligible. All the judges participated in this class but it was clear from the outset that guppies were badly handicapped, even size when considered against a 2 foot piranha. It was also clear that the man-made goldfish was under too great a handicap when in open competition with a fish that had started life in the wild. This criticism is also relevant to the goldfish when in competition with tropical fishes for the best fish in the show class. I have seen many perfect tropical fishes but I have yet to see a perfect goldfish.—Perfection in goldfish is relative, that is to say relative to the object to be achieved. When tropical fishes have standards for double anal and caudal fins where the wild specimen has only one of each, and when dorsal fins are missing where they are present in the wild, when eyes protrude outward and upward or merely bulge in a bulge art but are perfectly normal in the wild, then and only then, can goldfish fairly compete with tropical fishes. The recessive characteristics of domesticated fishes like goldfish and guppies will always be too great a handicap in open competition with wild fishes who are not subject to the same genetical laws.

While on this line of argument, the show also high-lighted a situation which is also troubling fishkeepers who delight to exhibit their fishes. At what point—if at all—is a line drawn between the man who breeds his fish and one who buys them? Should or should not encouragement be given to the exhibitor who has painstakingly bred his exhibits or has he to take his chance against the exhibitor who haunts the dealers' establishments? Perhaps the issue is not so marked
in the tropical section of the hobby, although I thought many of the huge, magnificent specimens on view would require tanks much larger than the average aquarist could afford or install in an ordinary home. So far as goldfish are concerned there is no doubt that possibly 60% of the fishes on view were of first-generation Chinese-Japanese origin. Perhaps I am old-fashioned enough to believe that the breeders are the backbone of the hobby, but I could be wrong.

In general I thought the standard of the fishes on show was high and well in keeping with the rest of the country. The Bristol Society exhibit demonstrated again, if that is necessary, that the west country can still produce lovely fishes. The Northern Goldfish and Pond Keepers Society put on an exhibition of which they can be justifiably proud.

Their shubunksins were equal to any on view and they did the "coldwater" enthusiasts proud. As previously mentioned, the tropical side of the hobby showed a new approach to tropical fishkeeping in which they challenged the native coldwater section for size and beauty of fish. But perhaps the most spectacular of all were the tropical marine exhibits, in which the mystery and beauty of the mighty oceans were glimpsed in a fascinating array of colour, vigour and contour. Heartiest congratulations to the Northern Marine Association, and the International Marine Study group. To all those others who backed up the Northern Federation so ably and so pictorially with their imaginative stands—well done—the hobby is pleased with you.

It would be churlish not to mention the support given by the trade. Here the full weight of the leading houses was bent to give attractive and eye-catching stands and no one visiting the exhibition would come away without realising how far the hobby has come since those early days when schoolboys of my generation had their first introduction to the hobby by exchanging Dad's old suit for a jam jar of goldfish. Filters, pumps and gadgets of every description were on view and if some of the super-furnished tanks were beyond the pocket of the average working man or schoolboy, the trade can be forgiven for demonstrating what a home aquarium can look like given the money.

It was still pouring with rain when Maurice Chase and I dashed for our train, but then Manchester always has had a reputation for being a damp place to visit.

**Mysteries of the Koi Carp**

AT the tenth annual convention of the **GOLDFISH SOCIETY OF GREAT BRITAIN** held in London at the end of October Mr Colin Roe of Shirley Aquatics Ltd was the afternoons's speaker. He told his audience about the history of the koi carp and discussed the problems that face a breeder trying to propagate these carp. In his talk, which was illustrated by colour slides, Mr Roe said that the origin of the fish, highly prized possessions of Japanese noblemen, is largely unknown. The breeding results with imported highly coloured specimens in this country are disappointing in that similarly highly coloured progeny do not appear.

In the members' show of fish there were a record number of 144 entries in the 12 classes, which were judged by Captain L. C. Betts, Mr W. Wilson and Mr J. Bundell. A leading authority on goldfish commented that this was probably the finest collection of representative goldfish varieties that had ever been brought together. Later, Captain Betts conducted an auction of quality goldfish. Show bench results were:

- Singletails (under 4 in.) 4 and 5, Mr H. F. T. Jago (40), Mr E. E. Eversley (79); 3, Miss D. Morris (75); Singletails (4 to 6 in.) 1 and 2, Miss D. Morris (64, 81); 3 and 4, Mr B. M. Whittington (72, 68); 5, Mr J. C. Bundell (73, 67), Mr E. E. Eversley (68, 67).
- Globose-eyes: 1 and 2, Mr R. J. Smith (68, 64); 3 and 4, Mr R. J. Smith (68, 64); 5, Mr J. C. Bundell (71, 76), Mr H. F. T. Jago (71, 76).
- Celestials: 1 and 2, Mr R. E. Easter (83, 78); 3, Mr E. E. Eversley (78); 4, Mr J. C. Bundell (63).
- Bubble-eyes 1, Mr R. J. Smith (76).
OVER the years of breeding tropical fishes the rosy tetra has presented me with much difficulty and it was 3 or 4 years before I got them to spawn. This lovely fish hails from Brazil and British Guiana and under good conditions its appearance is breathtaking. To get a nice shoal of about three to four dozen of them in a planted tank is a sight to behold.

Their semi-translucent bodies are suffused with a subdued red hue all over, with a deep red line on each side of the spine near the lateral line. The caudal, anal and pelvic fins are marked with red and, of course, their most feature is the long, sloping or sweeping dorsal fin, usually held erect, bearing the white-edged black patch that gives this fish the name of black-flag tetra in America. Sexing these fish is no problem as the female’s dorsal fin is quite short in comparison with the male’s.

In my experiences with this species, I soon found it was better to select a breeding pair that already showed signs of matching or mating from six or a dozen in the community tank, as I came to learn that they were quite choosy about their partners. After some weeks of conditioning them on chopped earthworms, large red Daphnia, ghost larvae, Tubifex and white worms I noticed that two females were ripe with eggs, with one male in full array always swimming around one or other of them and showing himself off in his best delightful colours.

Spawning Tank

So when more I prepared for what I thought would be another failure, since I never seemed to be successful with these fish. The tank used was a well-scrubbed and disinfected 24 in. by 12 in. by 12 in. (I would emphasise this preparation point as I think it is important to the spawning programme.) After a little thought I placed the tank where there was a little front light, but also some shaded or subdued light. I sorted out some large pieces of peat from a bag of peat moss and spread these out along the black-painted base to a depth of 2 inch. Some well-filtered rainwater was added, to a depth of about 4 in., and allowed to settle down for a bit. This was topped up with some very old tap water from one of my tanks, which brought the depth of water up to about 7 in. This old tap water had been run through some clean peat moss in a nylon net to give it an amber tint. I then left the tank to settle for a week, by which time the water was crystal clear. A bunch of willow roots (disinfected in a small tank of acriflavine) was placed near the centre back of the tank and the spawning medium thickened on both sides with bunches of Myriophyllum, Ambulia and Elodea densa. The temperature was 78°F (25°C), the pH 6.4–6.5; water hardness was not tested.

The selected pair were taken out of the community tank and placed in the breeding tank at dusk to allow them to settle down. During the next few days I noticed that the male was deepening in colour, but the female just lay down near the bottom of the tank under the spawning medium without a change of colour from her normal faint flushed pink hue.

Temperature Raised

For over a week things were quiet; the male had gone to the other end of the tank and appeared to have no interest in the female at all. I then gradually raised the temperature over the next few days to 82°F (28°C). Just as I was thinking it was going to be another failure, I noticed that the fish were together in the thickets, side by side, the male in brilliant colours flashing in and out of the plants and displaying to the female. Every now and again she would join him through the willow roots and plants to come back to where they started. I was watching from a distance so as not to make a noise or distract them, and I finally retired to leave them to it.

After several hours I noticed that the chasing and excitement had ceased. I left them a little longer and then in the evening carefully took the parents out. The only eggs I saw at this stage were those in the willow roots, perhaps because the roots were brown and the eggs showed up in contrast. I added a few drops of acriflavine to the tank and covered it right over with a sheet of brown paper to shield the eggs from the light.

The fry hatched in about 48 hours. They were very tiny and difficult to see. I then rolled the paper up from the front of the tank but left it on the top so that the fry should get used to the light gradually. After the fry had absorbed their egg sacs the smallest infusorians were
fed to them and, after a further few days, a touch of yolk of a hard-boiled egg pinched in the water. A week later, larger infusoria and brine shrimps were given.

I noticed by now that there were quite a few fry lagging behind in size. These were weaklings and later on were sorted out of the batch. After one month the fry were taking the shape of their parents and some were taking very fine Daphnia and Grindel worms. On this diet they seemed to shoot all of a sudden and really started to grow.

It was not a large spawning. On the final count, after weeding out, there were a total of 86 fish, which, when just over ½ inch long, were a grand sight to see in any tank. When breeding this species, and I tried many methods and different waters, I found that my best successes came from using soft, acid water, amber-coloured from peat. I have now reared some fine specimens of these fish and have kept them for a few years in good condition. The rosenroth is always a favourite and a good community fish.

What is Meant by the ‘Sub’ Groups

As well as genera and species, discussed in the preceding articles of this series, occasionally a ‘sub-genus’ or a ‘sub-species’ will be referred to. What are these extra divisions?

Brought about by an advance of knowledge concerning the biology of a group of fish, or from a fresh consideration of characteristics and so on, a genus might be divided into two or more divisions. Such an action is indicated by the insertion of the name of the sub-genus concerned, in parentheses:

Doras (Astronotus) asterifrons Heckel 1855

When such a sub-genus may be raised to the generic status at a later date it loses the original name:

Astronotus asterifrons (Heckel 1855)

Since this is the equivalent of transference from one genus to another it is marked by inserting the author’s name in parentheses.

When a genus is divided into sub-genera in this fashion, one of these sub-genera must retain the original name and, when being discussed, should be written with the addition of the abbreviation s.str. (sensu stricto, in the restricted sense), thus Astronotus genus = Doras s.str.

Sub-Species and Varieties

While the term ‘sub-species’ is often used in a manner identical with ‘variety’, this should not be considered strictly accurate. The former should be a definite division, the latter indicative of less certain features. This has been explained by instancing the gradual changes in the characteristics of a species occurring over a wide geographical range. These clines (as they are termed) can offer sub-specific differentiation between the terminations; in between are a number of different varieties. Whenever possible the two aspects should be separated:

Sub-species: Carassius auratus (Linnæus 1758)

The name of the author of the species may be omitted but not that of the author of the sub-species. This is the Prussian carp.

Varieties: Carassius auratus auratus (L. 1758) var. Lionhead

The name of the author of the variety is practically always omitted. This instance relates to the goldfish, which is the Asiatic sub-species of Carassius auratus.

Generally the names of sub-species and varieties are latinised but there are exceptions to this rule in the case of varieties: the goldfish is one such, although an attempt was made in this direction some years ago but it seems to have more or less died out. The lionhead, for example, was apparently termed var. battephalus.

Query Signs

It sometimes happens that a writer is in some doubt about the scientific name or names of a specimen under discussion, perhaps because he has not personally examined the specimen or for some other reason. As such doubt may have an important bearing upon the matter under examination, or solely for the need of scientific accuracy, he may consider it necessary to indicate this doubt when writing the name and this he may do as follows:

? Platypoecilus variatus (questioning the generic name)
Xiphophorus ? siphidium (questioning the trivial name)
Lomia nigrofasciata? (questioning the whole name)

A writer may place the query signs in brackets, but the intention is the same.
Knowing how a motor car works, what happens when we depress that pedal or pull that switch, won't make us drivers in the Jim Clark class, but it could help. On the same premise a study of the technical aspects of this fascinating hobby will also help to keep alive our interest in aquatics and open up new fields of interest. Take, for example, the understanding of how our thermostats work. I still hear fishkeepers bemoaning their fate because a simple piece of electrical apparatus like a thermostat had become faulty and 'boiled' all their fish.

For the benefit of any beginner reading this, this can happen if the thermostat controlling the heater and tank temperature sticks in the 'on' position and activates the heater continuously; the water then gets warmer and warmer and reaches temperatures that soon kill the fish. Yet the happening is so unnecessary, for with the expenditure of a few shillings and a little elbow grease it can be avoided.

Preventing a 'Boil-up'

In my experience of the hobby I have seen many ingenious 'early warning' systems, where a bell or light is activated at the first sign of a severe rise in a tank's temperature. All very commendable, but they didn't allow for the fact that most of us have to earn a living and this means we are absent from our homes for most of the day. The sound of a warning bell or a flashing light would be useless.

How then can we make a system that will work in our absence?

Simple! Buy an additional cheap, glass thermostat, and adjust the temperature control screw until the contact breaker points only open when the temperature reaches 85°F (30°C) plus.

If a glass container is filled with water at this temperature, and the thermostat is immersed in this, it is a simple matter to screw or unscrew the adjustment until the 'stat is activated when immersed in the water. The action depends upon a bi-metallic strip, affected by heat, you do not need the thermostat connected to the mains for this adjustment procedure. To some this is an obvious point but a puzzlement to the beginner.

This second thermostat, now set to switch off at 85°F, is then fitted in the normal heater/stat control system and hidden away at the rear of the tank. Fit it between the live side of the electricity supply and the first thermostat.

The action couldn't be simpler: under normal tank running conditions the first 'stat controls the tank temperature via the heater and keeps the water at the proper temperature; the second 'stat remains closed, allowing the current from the plug to flow. At the first sign of anything untoward happening (if the first 'stat fails) the second control switches off before the water gets too warm, and cuts off the electricity supply. All this takes place without your assistance.

Those amongst you who feel this is insurance with a
Transatlantic TOPICS

Continued from page 354

If a trophy were ever presented for the most difficult fish to net, high up on the list of contenders would be the billy loach. To prove my point, walk into your local aquatic dealers on a crowded Saturday afternoon and ask for one; immediately the smiling face of the owner will change to that of a cheer leader at a funeral!

But even if you succeed in netting this slippery customer you aren't out of the wood; along with the botia, these fish have single or double, movable spines under the eye, and these spines have the nasty habit of catching in the fabric of the net. If this happens, the only safe way is to cut them free.

* * *

Prisons without bars! That was how one famous fish personality in America once described an aquarium to me. A prison of another kind that contains quite a lot of bars was described in this column last year when I reported the fish show held by the inmates of the Indiana State Penitentiary. Now it seems that the intermin period has been put to good use by the prisoner members of their 'Fin and Gill Club'.

This unique aquarium society was the brain child of two prison officers, and we don't have the leeway to allow for two trips to the fish house.

There are various makes of time-switches on the market, some so simple to install that they require no provision wiring. The switch plug is merely inserted between the wire from the lights and the mains plug. A simple dial is set and, Hey Presto! the lights come on automatically.

This means that when you make that try for the Four Minute Mile after gulping down your breakfast the fish are fully awake and ready for their first meal of the day.

Some fittings will even turn off the lights again after a pre-arranged lapse of time.

You may think these two examples of where man's ingenuity can help with our hobby fussy to the extreme, not even worth the effort involved. But then perhaps you are satisfied that your fish aren't the envy of your visiting friends or that coveted trophy is always just out of reach...? Two simple extras don't make a Philosopher's Stone but they help.

publicity stunt and the organisers, never expecting any volunteers, had laid on other arrangements to entertain those who turned up. Imagine their surprise when nine children, aged 8 to 12 years, turned up, each armed with documentary permission to take part in the contest from their respective parents!

After everyone of them had succeeded in swallowing a dozen live fish each and showed signs of going on, the embarrassed officials offered them bribes and narrowed the contest down to just one boy and one girl.

When fish number 21 also disappeared down their throats, the pet centre called a halt, declared the competition a draw and presented each of the children with a complete aquarium set-up.

Now, I would like to know how these two 'kiddies' are ever going to keep those tanks well stocked with fish after displaying such carnivorous tendencies?

When this is performed as a stunt on the stage, thin slices of raw carrot shaped like a fish are made to gyrate in life-like manner by the person performing, but I have it on good authority that this was not the case with this stunt; live fish were used. Definitely, this sort of 'performance' rates an X certificate!
Coloured Plants for the Aquarium

Barclaya longifolia Wallich

By C. D. ROE

This plant was a sensational introduction by an amateur, Mr Peter Tsang of Hong Kong, in 1966. I received a letter from him describing the plant and offering me his parent plant at what he described as a fantastically high price, but offering to exchange some seedlings which he had raised for other rare plants.

I received from him in due course one or two tiny seedlings and a small amount of silt, which he assured me contained seeds of this plant, and which he said would take a long time to germinate. I planted these in a small pot and after 6 months of patient waiting eventually forgot them.

Meanwhile the seedlings I had received had grown rapidly into very nice plants with olive-green leaves approximately 6 in. in length and 1½ in. wide, with brilliant purple undersides. Quite soon these plants produced flowers that seemed to just reach the surface and immediately became submerged again, but which readily produced seeds; these require approximately 2 months to ripen.

The seeds are extremely small and take usually from 6 to 12 months to germinate.

One day, some 9 months after ensuring my original plant, I was surprised to find three tiny seedlings of Barclaya longifolia in the pot where I had originally planted the first seeds. I carefully transferred them to other pots and eventually raised seven seedlings from this batch of seeds.

In 1968 or thereabouts Mr Tsang travelled to Burma and sent me further stock of Barclaya longifolia, and today this plant is in moderate supply, so that usually one can obtain a 4-in. plant. It is a member of the family Nymphaeaceae, to which the water lilies belong, and like most members of this family is a heavy feeder so should be given some food, preferably a little rich loam in its roots.

It does well in a heavily planted aquarium, holding its own well in competition with other plants. Snails, however, tend to spoil the leaves in the same way they do with those of nupharas. In Nature it is found in dirty overgrown margins of streams in rain forests receiving little light, so that it does quite well in a shady situation or an aquarium lacking the light which many other plants require. Although propagation is mainly from seeds, a mature plant can be divided.
Readers’ Queries Answered

Artificial Plants

I am setting up an aquarium for tropical fish, 42 in. by 16 in. by 15 in. high, with a filter and air stone. Can I use artificial plants instead of real ones?

It is certainly possible to set up a large tank without plants as long as air stones and good filtration are provided. Large cichlids, in fact, are usually kept in plantless tanks because of their habit of uprooting and destroying any plant in sight. Large goldfish can also be kept in this way. But these are usually desperate remedies where two or three large well-placed rocks provide the few large fish in the tank with sufficient cover. It would be very unusual to keep a community of fishes in a plantless tank and some varieties of fishes would not thrive in a tank without any cover into which they could retire for shade and protection, apart from the effects of harmful changes in the water that would require frequent attention to the filter to put right. Also, as many fishes require a certain amount of green matter in their diet, the addition of a floating plant such as Riccia, duckweed or the occasional feed with baby-food concentrate of spinach, would be essential.

Fluorescent Lighting

What real difference is there between an ordinary fluorescent tube lighting and a Gro-Lux tube as regards lighting a fish tank?

The difference lies in the quality of the light. The Gro-Lux tube gives a pink hue, which has been claimed to be particularly suitable for the growth of some plants. It also greatly increases the apparent intensity of reds in subjects lit by it, so that reddish plants and fishes such as red swordtails, red platys, moons and cardinals etc. appear particularly vivid in this light. As a working rule, about 2 watts of Gro-Lux lighting per gallon of water is recommended in aquaria of normal depth.

Too Much Salt

To the writer in my tropical tank I have added 1 lb of salt. The fish are very healthy but the plants are rotting. I have recently fitted a 50 watt Gro-Lux lighting tube, but I wondered if you could suggest a set of plants that will live in this water?

It seems unlikely that you will achieve successful plant growth with the concentration of salt that you are at present using. The new 50 watt Gro-Lux tube should bring about an improvement, but if this is not observed, then it would be advisable to decrease the salt concentration by removing some of the water and replacing it with fresh.

BRITISH AQUARIISTS FESTIVAL 1967

Sweet Sixteen

By JIM KELLY

HAVING just visited my sixteenth B.A.F., I no longer believe that there are as good fishes still in the waters of the world as ever came out of them—all the best fishes in Britain seemed to be at Belle Vue Zoological Gardens that week.

In previous years the week before the show has seen me engrossed in the bustling of stand erection and the thousand and one jobs that any club member is heir to, but this year circumstances kept me away so I was able to see the show complete when I arrived to help with the judging on the Friday.

I decided to arrive early and have a sneak preview. How early I didn’t realise until the noise of a cock crowing deafened my ears as I entered the exhibition hall; but the smiling face of show manager Clifford Walker soon dispelled the look of incredulity on my face, he explained the cock was merely part of the animated exhibit put on by one of the competing societies. Feeling like a mouse at a Harvest Festival, I began my tour.

The format was so racy that I had the distinct impression of being taken on an exciting romp through the psychological hinterland of aquatic club life presented through the eyes of a drug addict gone on Crown wallpaper and Pop art, yet completing my round I emerged with a feeling that the band of enthusiasts under the F.N.A.S. banner had chalked up yet another victory with a show worthy of the title British Aquarists’ Festival.

When I describe it as a psychedelic hayride, we are nearer the truth than one realises: STRETTFORD A.S. provided the hay a-plenty with their wonderful, prize-winning native hut and kraal (complete with livestock), and BLACKPOOL A.S. displayed a huge musical box, whose sides were adorned with beautiful coloured panels. Not to be outdone, nearby LOYNE A.S. displayed a large artist’s palette, whose many colours brightened the scene. But did I detect that most of the exhibiting
societies had forsaken the 'decoration' and plumped for simple, but effective, stands to hold their fish exhibits.

Despite the dazzling display of tropics it was nice to see that the humble goldfish had its place and, judging by the expression on the face of NORTHERN GOLDFISH AND PONDKEEPERS' ASSOCIATION member, Stan Taylor (coating as chief steward), the goldfish had gone far from the days when they were legal tender for jam-jars and cast-off clothing!

Distance seemed to be no object for the competing groups, many travelling up from the south; seven new societies (that is, new to B.A.F.), Thetford, Bristol, Loynes, Valley, Henson, Kingston and Glossop, were represented and the last-named had a stand in the shape of a huge windmill towering nearly to the roof of the exhibition hall.

Space won't permit a blow-by-blow description of all the effort on view, but one stand, that of GORTON AND OPENSHAW questions, was unique in that the groto they had built had been erected by just four members and I learnt later from their chairman, Eric Price, that its construction had cost them a penny—quite an achievement.

Marine tropics were well to the fore, bearing witness to the fact that this branch of the hobby is fast catching on.

One part of the show I take a personal interest is in that of the Novelty and Aquascape. Having struggled with this type of aquatic art I can understand the problems—maybe the reason why they let me judge them. First prize was awarded to Mrs. M. Knowles (Sheffield) for a large display entitled 'Nepheine's Zoo Park'. That considerable hard work and thought had gone into it was evidenced by the dozens of tiny figures all made from sea shells, the park being illuminated by 'pea' bulbs that added a touch of the ethereal to the underwater scene.

For the fishes on show, I leave the list of results to speak for itself, but all the twelve of us judges had our work cut out in deciding the best from what was on the whole an excellent turn-out.

To all those who worked so hard planning and preparing the judging, on this show, from George W. Cooke, the show secretary, right through all the competing groups, our congratulations. By the time Sunday evening rolled round, thousands of people had passed through the turnstiles; surely the biggest fish guru seen in Britain since the war days of rationing?

Next year the Federation of Northern Aquarium Societies, the body responsible for the B.A.F., comes of age and celebrates its twenty-first year. In continuing to present such an annual Festival they have proved they already have the key to successful show business.

B.A.F. Results

[Details of competition entries and results are listed, including names, places, and descriptions of trophies and awards awarded.]

[Further details are provided on various categories, such as Novelty and Aquascape, with individual entries and their descriptions.]

[Fish exhibitors, their locations, and any relevant notes are included, giving a sense of the diversity and effort put into the event.]

[Concluding remarks on the event, including thanks to the organizers and judges, and references to the future of the federation.]
A Marine Pond

By R. J. BROOKER

With a swirl and a splash of water the cod come to take limpet flesh from the hand of their keeper, Mrs Gardner.

At the small seaside village of Port Logan in Wigtownshire is one of the most unusual aspects of the fish-human relationships. Here, hewn in the rocky north shore of the bay, is a fish pond that diminishes all those that are compared with it. Here, Mrs Gardner keeps pet cod.

There are 11 cod, seven saith, two wrasse and two sea-trout in the pond, which measures 50 feet across its diameter. There is a small hole leading out to the sea, which allows clean water to enter the pond at high tide, and a piece of mesh across it prevents the fishes from escaping.

The pond was first established in 1800 by Colonel Andrew McDouall, who set his Spanish prisoners to work so that during stormy weather he would still have fresh fish for his dinner table at Logan House. By the end of the century there were about 50 cod in the pond but during the last war a mine, which had been washed ashore by a gale, exploded nearby severely damaging the keeper's cottage and the shock killed all the fish.

In 1954 the ponds were officially re-opened to the public by the Queen Mother, but this time on a commercial basis. In 1965 about 8,000 visitors from all corners of the globe came to see this phenomenon of the fish eating out of their keeper's hand.

The pond now belongs to Sir Ninian Buchan Hepburn, the present Laird of the Logan Estate. Mrs Gardner has been the keeper there for about a year. At first she threw the limpets in to the fish but, gradually, they began to trust her and after about a month the cod were eating out of her hand.

Now each time a visitor calls to see the fish Mrs Gardner walks down the steps from her white-washed cottage and by swirling her hand in the water calls the fish for their meal.

Aqua-tip

I would like to share with other readers of PetFish a way I have devised for removing the earth from the inside and outside of earthworms. First, cut up a sheet of foam rubber into small squares of about ½ in. These are then moistened and placed in a glass jar or any other suitable container with a close-fitting lid. The earthworms are then placed in the jar with the foam rubber and left for a day or two. They are then taken out and fed to the fish either chopped or whole depending on size. The foam rubber can be washed in clean water to get rid of the soil and used again.

IAN WEST
GUPPY WORLD

PETER UNWIN'S
Notebook

Every hand one seems examples the similarity of sexes when applied to this modern generation. With men wearing their hair long and women donning trouser suits, the differences between male and female are becoming increasingly hard to tell. Not so in the world of the guppy. After three decades of male domination, the female is finally coming into her own and more and more breeders are now endeavouring to domesticate la femme. Good-sized guppy females should measure at least 2 inches from the tip of the tippet to the caudal peduncle; add to this the extra length of the tail fin, and the female Pocella is an impressive sight when compared with the diminutive male. Why then don't we see more females attaining these specifications on the show bench? To those in the know, the answer is clear. To achieve full growth she must be kept virgin, so your tasks must be to ensure two types of female: those you use to produce the future generation and those you exhibit on the show bench. It has been well known (and just as well kept a secret) that virgin females grow at about twice the rate of those of their breed sisters who are allowed to become mothers; maybe the induction of fry rebo their body of vital growth factors, who know. What we do know is that show guppies are just that and no more.

One snag about keeping the female away from the male is that she tends to become sterile. Could this be the reason why so many prize specimens purchased at shows never produce any worthwhile broods for their proud purchasers?

On the other hand, male guppies kept isolated from the females display just the opposite tendencies and tend to remain small and don't display their coloration to the full. Here the reason is obvious: the male guppy uses every trick in his book to attract the interests of the female during courtship and though the gyrations of his body are important, equally so are the colours he displays.

The new combined standards of the two major guppy groups in these Islands now list five different females: roundtail, scalloptail, wedge-tail, super-sizes and metropolitan. Add to these finnage shapes the new and wonderful colours being attained by today's breeder, and one has scope in plenty. I can predict great things for the breeder with an eye on the future.

THE word 'fix' in the present glamour about drug addiction has come to have a special connotation. Now, though I admit that guppy breeding can be likened to a drug at times, the word 'fix' when applied to this branch of the hobby has completely different meanings.

From time to time most breeders of guppies throw out mutations, fish, either singular or plural, that differ in some way from their parents; from these apparent oddities have derived the many and varied specimens we see today.

In the tanks of the unobservant, these mutations are netted out when the fry are culled but to the ardent enthusiast these fish represent a challenge, a chance to breed and produce in quantity something different.

The subsequent actions required to do this are called 'fixing the strain', and with our love of abbreviation this is shortened to simply 'fix'.

Now the methods of doing this are many and varied and have made guppy breeding the most inexact science since the Oracle of Delphi, but for those willing to try I can do no better than recommend that they read PORTRAIT OF A GUPPY, by Lawrence Konig (published in the U.S.A.). This sets the methods used in a simple and straightforward manner that even the rawest of aquarists could follow.

Briefly, the idea is (in the case of a female) to cross her with one of your best males. When the fry are born they are sexed as soon as possible, each female being allocated a separate tank or container. These are then crossed back to their father and the results of this second mating closely observed. Any daughter producing young with the sought-after 'difference' is then retained, the rest are discarded; inbreeding follows until the mutation is fixed.

That this takes up a lot of tanks, I don't deny, neither is it a quick ladder to success, but then the latter has always been the prerogative of the few who showed they had patience in profusion. After all, if it were easy we should all be champions!

WITH the lessening of the daylight hours and the bi-annual interference with our clocks (I never can remember whether they go back or forwards), it is pretty evident that the cold weather will soon be upon us.

So too will that perennial advice to look to our heating arrangements, but to those guppy breeders that use the lowly earthworm it means scenes of feverish activity if they are to ensure regular supplies during the winter.

As the cold weather approaches the worms go deeper and deeper into the ground and make their harvesting all that more difficult; now is the time to start a culture in a shaded spot in the garden. Moisten the earth, seed it with a few specimens and after feeding the culture
cover it with a damp piece of sacking. The expenditure of a little energy will ensure your supplies of this nutritious food.

BILL ARMITAGE'S

Comment

NOW that the new set of standards for guppies have been put into operation and received the full approval of the members of both guppy organisations, we must surely look forward to more shows run on the same lines as the recent Liverpool and Birmingham shows. There is little doubt that if the guppy world in general were to adopt this fine set of standards, thereby making them universal, it would be a big step towards the complete unification of show standards for the guppy breeder. The possibility of an international show with a dozen or more countries exhibiting and all adhering to the same set of standards, must gladden the hearts of all guppy breeders. The fact that a governing body would be required to administer a universal standard need present no great difficulties—such bodies are fairly common in most walks of life. I am sure that if the F.G.A. and the F.G.B.S. were to combine they could stage a really large international show successfully.

AT what age do guppies reach maturity is a question that is often asked by the novice guppy breeder. The expert breeders' answer is invariably the same, i.e. the male matures fully at 5 months and the female at 7 months. This, of course, is not strictly true; in the average brood of guppies the novice will find a variance in size. Some will develop to maturity in the period stated by the experienced breeder, while a proportion will develop more slowly. Most breeders dispose of these late developers, but provided that tank space is available the beginner would be well advised to grow them on as there may be a good one among them.

DURING the winter months most aquarium plants become somewhat retarded in growth. This is also the time of the year when new plants are most likely to carry disease and harmful parasites. It is therefore advisable to disinfect plants before planting them. An easy and effective way to disinfect is to soak the plants in a mild solution of potassium permanganate for about 30 minutes and then well in clean water before planting or replanting.

Exhibiting Guppies on the Continent

By DORIS COURT
Osseus secretary, F.G.B.S.

In the November issue of F.G.M's Guppy World was an item about sending fish to continental shows. As overseas secretary for the Federation of Guppy Breeders' Societies, I have sent exhibits for myself and various members of the Federation to exhibitions in Berlin and other parts of the Continent. These guppies must have arrived in good condition as they took several first and many other awards. As a rough guide, it cost between 3 and 5 shillings per fish to the Continent, and the more fish that are sent the cheaper it becomes.

There is one important factor which considerably lessens expense. That is an arrangement I have with a number of well-known continental guppy breeders—that all fish sent to this country for exhibition and show purposes shall remain here. Similarly, all guppies we have sent overseas have been allowed to stay in the country to which they were sent.

For the international class of the Federation annual show I received approximately 180 guppies from different parts of the world including Germany, Denmark and America. Various methods were used to transport them and their condition varied in relation to packaging.

With the very keen interest there is in showing and developing guppies here in the British Isles, this country should hold some of the largest and most successful international shows. The first step towards achieving this is if we, the guppy breeders, make the effort to send our guppies overseas. In return, I know, our counterparts throughout the world will respond by exhibiting in our shows. Any person who is interested in breeding and showing guppies—whether he or she is a member of a society or not—can apply to me for information. I shall be very happy to supply details.

ADVICE (otherwise we would take our custom elsewhere). My own personal experience over the years has been one of mutual cordiality and I have made many friends in the trade. But this does not alter the fact that in my opinion one would not normally advise a beginner to go to a pet shop to purchase his initial stock of a particular (guppy) strain. It is ludicrous, to say the least, to expect any dealer however large or small to stock several strains of guppies. Readers will no doubt be aware that I have been criticised by members of the management committee of the F.G.A. on this point, but I still maintain, and I believe the majority of guppy breeders agree with me, that the best person to obtain breeding stock from is the breeder himself.
THE FIRST of their challenge shows was held by BEDWORTH A. & P.S. recently. Competitors were members of NUNEATON A.S. Mr and Mrs W. Eddon, Mr D. Emery and Mr W. Devison judged the 64 fishes on show, and decided the kissing gourmets of Mr F. Tindall as the best fish in the show.

Results:
- Ladies: 1st, Mrs S. Leigh; 2nd, and 3rd, Mrs. Dyens and Mr Jones.
- Boys: 1st, Mr F. Tindall; 2nd, Mrs. Dyens and Mr Jones.
- Ladies: 1st, Mrs S. Leigh; 2nd, and 3rd, Mrs. Dyens and Mr Jones.
- Boys: 1st, Mr F. Tindall; 2nd, Mrs. Dyens and Mr Jones.
- In 1st place, and 2nd place, Mr and Mrs B. Illingworth (tied); 3rd, Mr J. Glover (gourmand). Best Fish was awarded to Mr. S. Bartlett, the judge.
- Mrs B. Illingworth (tied); 3rd, Mr J. Glover (gourmand). Best Fish was awarded to Mr. S. Bartlett, the judge.

IN November a meeting was held of ASSOCIATED SOUTHERN AQUARIST Societies, the body formed this year for the mutual assistance of southern societies in such matters as obtaininglecturers and judges and in staging shows and meetings generally. Functioning within the framework of the F.B.A.S., the A.S.A.S. is currently constituted by the societies (Brighton, Worthing, Portsmouth, Winchester, Gosport, Southampton, Bournemouth, New Forest and Salisbury). A proposal before the meeting was for individual memberships of the affiliated societies to confer associate membership as well of each society in the group.

THE VERY successful annual show of the EAST LONDON AQUARIUM and PONDKEEPERS ASSOCIATION, held at Ripple Road School, Barking, Essex, tried out an interesting innovation in allowing entries for pairs of mollies, platies, swordtails and guppies. In the main, the show was for tropical breeding achievements (fish bred since 1st June 1966) and instead of the usual a.v. cichlid, a.v. characin etc. classes, the F.B.A.S. standards of 'difficulty of breeding' were taken as the criteria, thus allowing an entry of say, fighter, to compete with other fish ruled by the F.B.A.S. to be of a similar standard of 'difficulty of breeding'. A further innovation was a somewhat unusual feature of the show was the high number of furnished aquaria entered—20 in total—which added a great deal of colour and interest. The open club furnished aquarium (24 in. by 15 in. by 12 in.) class for the I.G.M. trophy was won by the East London A.C., the individual furnished aquaria class of the same size by Mr A. Field, and the 12 in. by 8 in. by 8 in. class by Mrs S. Armitage. The award for the best plant of the show went to Mrs P. Harris for her most beautiful specimen of C. balzanius.

The open breeders entries of a.v.

The society are grateful to Mr D. Durrant and Mr S. Hendle for making the long journey to Manchester for the B.A.F. in a first-class venture from Thurrock that proved very successful. The model of a Yellow Submarine with tanks inserted at various points attracted quite a lot of attention. Also on the table Mr Durrant and Mr Hendle set up a furnished tank with fish supplied by the society's president, Mr R. Nicholls. Mr E. A. Nixon and Mr P. O'Bryan entered fish and Mr Durrant came away with a first and second for his fighters.

The consistent standard of fighters he is producing have won many open show awards and best-fish-in-show placings this year.

The sub-committee set up to consider holding an open table show has reported favourably on the project and the 20th April 1968 will see Thurrock A.S. first open table show. Another success has been the acceptance of club member Mr E. R. Nixon as an F.B.A.S. class B judge. Together with a steady and continual increase in new members and the strong support of the whole club, 1967 has been a very successful year for Thurrock. The club's president, chairman, committee and members with aquarists everywhere a merry Christmas and a happy New Year.
eglayer numbered 18 and these were divided into three classes. Class 1 (with F.B.A.S. standard of difficulty of breeding 19 points and over) was won by Mr F. Vicker with an entry of emperor tetras. Class 2 (for F.B.A.S. standard 18-14 points) was won by Mr A. Field with an entry of cherry barbs; and class 3 (13 points and under difficulty of breeding) was won by Mrs P. Harris with an entry of zebras. There were no entries for a.v. livebearers with the F.B.A.S. standard of difficulty of 14 points and over; the class for the standard of 13 points and under was won by Mr D. Snalley with an entry of yellow wagtail platys.

Classes for pairs of livebearers resulted in a first for Mrs P. Harris (black mollies); Mr G. Green (platies); Mr P. Hines (swordtails); Mr J. Bentley (guppies). The E.L.A.P.A. five-star cup was won by Mrs P. Harris and the three-star Wade trophy for juniors by Mr S. Mayhew (who also won the Gill Challenge cup). Mr A. Field won the Breeders Achievement cup with his entry of cherry barbs which, also won him the Manor cup and the F.B.A.S. shield; Mrs P. Harris was awarded the Credo cup for her plant, and the Olympia cup for the coldwater classes was won by Mr J. Linde.

DEALING WITH THE sudden emergencies of the fishkeeping hobby must provide very good training for life's other emergencies, such as a power cut towards the end of a inter-club show at which HORSFORTH A.S. were host to the HALIFAX, PONTFRACENT AND WHITE ROSE clubs. It happened just as the awards were being presented and in no time at all torches and even candles had been produced and the situation dealt with. Fortunately the very enjoyable slide show on cichlids and their breeding habits (with a tape-recorded commentary by Senor Hans Hals) had already been shown by the chairman of the host society, Mr R. Hampson.

THE BRITISH AQUARIUM STUDY SOCIETY (B.A.S.) held its twelfth annual general meeting and Conference in October at the London Zoo. Members elected to office were: Mr J. L. M. Judge, president; Dr G. Cust, chairman; Mr F. Keens, treasurer; Mr T. F. Tomlinson, secretary.

At the conference in the afternoon, Mr Colin Roe of Streets Aquatics gave an excellent lecture, illustrated with slides, on tropical marine aquaria. The talk gave rise to many questions and great interest and although in the time available Mr Roe could only touch on the subject, it is hoped that he will be able to return at a later date for a more detailed account.

THE RESULTS OF THE second BRITISH KILLIFISH ASSOCIATION international show that was held at the time of the M.A.P.S. show in Bingley Hall, Birmingham, have just been received. Mr Dave Ellis judged the 250 fishes bench and made the following awards:


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The second half of the meeting took the form of a series of discussions led by members and taken up by the rest of the audience. The first topic was ‘Man-made fish are an improvement on nature’. Mr R. Mealand and Mr R. Eason voiced the opposite, and after a lengthy discussion it was generally agreed that there were cases for and against but that in general the choice was for the individual fishkeeper to choose. Mr Cust then spoke on the Fish Clubs really necessary and after a number of interesting views were voiced it was agreed that the fish societies were the backbone of the hobby. The meeting ended with a visit to the aquarium, by kind permission of Dr Gwyn Evers.

HOUNSLOW & D. A.S. annual open show was an outstanding success, well attended and well attended and lived up to expectations. Mr B. Abbott, press secretary, writes us: ‘With over 150 entries it was almost certainly the largest open show in the south of England. Nearly all the fish were bench'd and exhibited in stainless-steel tanks provided by the society, but entries flooded in so fast at the last moment that certain classes had to be re-arranged to be shown in jars.’ The best fish in show trophy was won by Mr Roy Biggs of Kng's Norton and after a lengthy discussion it was generally agreed that there were cases for and against but that in general the choice was for the individual fishkeeper to choose. Mr Cust then spoke on the Fish Clubs really necessary and after a number of interesting views were voiced it was agreed that the fish societies were the backbone of the hobby. The meeting ended with a visit to the aquarium, by kind permission of Dr Gwyn Evers.
First Open Show by Reigate and Redhill

ENTRIES from 28 societies totalling 356 fishes benched ensured the great success of the first open show staged by Reigate & Redhill A.S., which has brought forth a spate of congratulatory letters to show secretary, Mr. G. Chough (Gosport). An excellently produced special open show edition of the Club newsletter on sale at the show gave members of the general public a first-rate insight into club activities and the pleasures and problems of fishkeeping. Metaframe tanks used at the show were loaned by Interpet Ltd. Prizes were presented by president, Mr Ken Fawcett of T.F.H. Publications and details of award winners are:

- Club furnished aquaria, tropical: 1, 2, Portsmouth; 3, Uxbridge. Club furnished aquaria, coldwater: 1, Reigate & Redhill; 2, Miss Stevens (Uxbridge); 3, Mr. G. E. Greenhalf (Romford & Becontree).
- Individual furnished aquaria: 1, Mr. T. J. Simmons (Southchurch); 2, Mrs. S. J. Atkinson (Brighton); 3, Mrs. M. J. Hickman (Brighton).
- A.V. aquaria: 1, Mr. A. E. Hough (West Ewell); 2, Mr. T. E. Price (Romford); 3, Miss E. B. Bush (Romford).
- A.V. goldfish: 1, Mr. G. Greenhalf (Romford); 2, Mr. R. Armstrong (Brighton); 3, Mr. J. L. Jordan (Epsom).
- A.V. fancy goldfish: 1, Miss L. J. Armstrong (Brighton); 2, Mr. R. Armstrong (Brighton); 3, Mr. R. Armstrong (Brighton).
- A.V. fancy champagne goldfish: 1, Mr. R. Armstrong (Brighton); 2, Mr. R. Armstrong (Brighton); 3, Mr. R. Armstrong (Brighton).
- A.V. fancy silverfish: 1, Mr. R. Armstrong (Brighton); 2, Mr. R. Armstrong (Brighton); 3, Mr. R. Armstrong (Brighton).
- A.V. fancy turquoise: 1, Mr. R. Armstrong (Brighton); 2, Mr. R. Armstrong (Brighton); 3, Mr. R. Armstrong (Brighton).
- A.V. fancy silver: 1, Mr. R. Armstrong (Brighton); 2, Mr. R. Armstrong (Brighton); 3, Mr. R. Armstrong (Brighton).

Coldwater categories:
- Single tanks: 1, Mr. R. Armstrong (Brighton); 2, Mr. R. Armstrong (Brighton); 3, Miss L. J. Armstrong (Brighton).
- Mixed tanks: 1, Mr. R. Armstrong (Brighton); 2, Mr. R. Armstrong (Brighton); 3, Mr. R. Armstrong (Brighton).
- A.V. mixed tanks: 1, Mr. R. Armstrong (Brighton); 2, Mr. R. Armstrong (Brighton); 3, Mr. R. Armstrong (Brighton).
- A.V. coldwater: 1, Mr. R. Armstrong (Brighton); 2, Mr. R. Armstrong (Brighton); 3, Mr. R. Armstrong (Brighton).

Results of the Bracknell & D.A.S. open show have been received. These are:

- Common goldfish: 1, Mr. J. Norris (77 points); 2, Mr. W. Leach (78); 3, Mr. N. Bevis (79); 4, Mr. R. Berridge (80); 5, Mr. C. F. Beavis (Brindley) (81); 6, Mr. J. Stillwell (82); 7, Mr. G. E. Greenhalf (83); 8, Mr. R. Armstrong (84); 9, Mr. R. Armstrong (85); 10, Mr. T. J. Simmons (86).
- Fancy goldfish: 1, Mr. R. Armstrong (87); 2, Mr. R. Armstrong (88); 3, Mr. R. Armstrong (89); 4, Mr. R. Armstrong (90); 5, Mr. R. Armstrong (91); 6, Mr. R. Armstrong (92); 7, Mr. R. Armstrong (93); 8, Mr. R. Armstrong (94); 9, Mr. R. Armstrong (95); 10, Mr. R. Armstrong (96).
- Common fantail: 1, Mr. R. Armstrong (97); 2, Mr. R. Armstrong (98); 3, Mr. R. Armstrong (99); 4, Mr. R. Armstrong (100); 5, Mr. R. Armstrong (101); 6, Mr. R. Armstrong (102); 7, Mr. R. Armstrong (103); 8, Mr. R. Armstrong (104); 9, Mr. R. Armstrong (105); 10, Mr. R. Armstrong (106).
- Fancy fantail: 1, Mr. R. Armstrong (107); 2, Mr. R. Armstrong (108); 3, Mr. R. Armstrong (109); 4, Mr. R. Armstrong (110); 5, Mr. R. Armstrong (111); 6, Mr. R. Armstrong (112); 7, Mr. R. Armstrong (113); 8, Mr. R. Armstrong (114); 9, Mr. R. Armstrong (115); 10, Mr. R. Armstrong (116).

Trophy won were: The Rundle Hill Challenge bowl (club aquarium), Reigate & Redhill gold fish for best fish in show, Mrs Stillwell of Portsmouth; the Carlington cup (best tropical fish), Mrs Stillwell of Portsmouth; the F.B.A. trophy for the best basin fish, Mr. F. G. Gunn of the S.P.A.S.; the Gay Dogs cup (best characin), Mr. G. E. Greenhalf (Kingston); the G. B. Bass cup (best fancy guppy), Mr. B. Webster (F.G.A.); the G.S.G.B. trophy (best basic variety goldfish), Mr. J. Linale (Romford & Becontree); the Daphne Morris cup (best twigtail), Mr. J. Linale (Romford & Becontree).
Best fish in the show was an X-ray tetra owned by M. G. Rivett of Cambridge.

COMPETITORS from places as far away as Nottingham, Croydon and Kingston benchfed fish at the first open show given by MID-HERTS A.S. In all, there were over 400 entries and this, together with the interest shown by the public locally (bringing several new members to the club) gives encouragement to the plan for a bigger and better show next year.

The F.R.A.S. shield and special prize for best fish in show were won by Mr A. Jameson with an albino tetra.
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Club News

Continued from page 374

A REALLY INTERNATIONAL flavour was given to the annual show of the FEDERATION OF GUPPY BREEDERS' SOCIETIES held this autumn at Weston-super-Mare. Entries from Germany, Austria, Denmark, Puerto Rico and the U.S.A. made up a grand total of 122 out of the total 375 entries benched. Much of the credit for this must be given to the tremendous efforts of the overseas secretary, Mrs Doris Court and, in fact, recognition was given by inviting her to present the trophy to her at this show of the W. G. Phillips award for meritorious service to the Federation.

Award winners were:

Open Challenge trophy, Mr D. Craig (Eastern Counties); Trophy for First-ancestor pair, the Parisian Gold Medal, Mr M. Bowler (Bedford); second place in the Parisians and One colour group, Mrs A. Bowers (Bedford); third place, Mr B. Grady (Redbridge); second place in the Seviers and Potato group, the A. C. saxatilis Medal, Mr J. L. J. Jobson (Bedford); third place, the W. G. Phillips Medal, Mr J. L. J. Jobson (Bedford).

The South London cup, Mr R. Scott (Godalming); the North London cup, Mr J. Mayne (Oxford); the Eastern Counties cup, Mr W. G. Phillips (Bedford); the Brussels cup, Mr C. W. M. V. de Bie (Brussels); the Budapest cup, Mr J. W. Hambleton (Budapest); the South Midlands cup, Mr J. W. Hambleton (Budapest); the North Midlands cup, Mr J. W. Hambleton (Budapest); the Belgium cup, Mr J. W. Hambleton (Budapest); the Holland cup, Mr M. Delgropulo (successor).

THE BRITISH KILLIFISH ASSOCIATION is well known as the international association, as at the last count membership was drawn from 14 countries and from as far away as Australia, Argentina, Hong Kong, Mexico, New Zealand and South Africa.

Briefly, the aims of the B.K.A. are to further this particular field of tropical fish keeping by propagation and stabilisation of the many species of killies; and where possible, in conjunction with leading Museums all over the world, to assist in classification of species.

Each month members receive a newsletter, informative leaflet dealing with a particular killie, and an egg and fish list, in which members can advertise free. Booklets are also published as and when available. If you are interested in killifish, sometimes known as toothcrops, wish to join the B.K.A. the secretary, Miss Kay Bruce (Bedford) 19 Blackheath Road, Greenwich, London, S.E.10) will be very pleased to answer enquiries (a.s.a.p. please).

THE SECOND open show held by AMERSHAM & D. A.S. received twice as many entries as last year. There was a wide variety of tropical fishes, furnished aquariums, mini-tanks and coldwater fishes. Judges were Mr and Mrs F. Watts and the prizes were presented by the chairman, Mr J. K. Harding. The shield for the best fish of the show was won by Mr T. D. Smith (Hendon) for his spiny cichlid. Other prize winners were:

A.A., male guppy: 1, Mr C. Tooth; 2, Mr T. D. Smith; 3, Mr R. L. Leppard.
A.A., male mollies: 1, Mr J. L. J. Jobson; 2, Mr T. D. Smith; 3, Mr J. G. Reavel.
A.A., male swordtails: 1, Mr J. L. J. Jobson; 2, Mr T. D. Smith; 3, Mr J. G. Reavel.
A.A., female guppies: 1, Mr C. Tooth; 2, Mr J. L. J. Jobson; 3, Mrs M. Lewis.
A.A., female mollies: 1, Mr C. Tooth; 2, Mr J. L. J. Jobson; 3, Mrs M. Lewis.
A.A., female swordtails: 1, Mr C. Tooth; 2, Mr J. L. J. Jobson; 3, Mrs M. Lewis.
In Brief...

BRISTOL TROPICAL FISH CLUB and the members explored another field of fishkeeping when Mr Amey, the chief bailiff of the Bristol Avon River Authority, visited the club to describe the work the Board do in re-stocking the rivers and reservoirs and also the massive breeding programmes that are in operation. A slide show accompanied the talk and members look forward to a return visit from Mr Amey soon.

The breeders' class table show results were: Open: 1 and 3, Mr B. Leeton; 2, Mr P. Brown. Novice: 1 and 2, Mr B. Leeton; 3, Mr J. Tiley.

LEAMINGTON & D. A.S. have lost the services of Mrs Sylvia Underwood as secretary, much to their regret, owing to problems of obtaining baby-sitters. Mr Underwood has taken on the combined duties of secretary and show secretary until the end of the year and Mr M. Smith has joined the committee as assistant Show secretary to replace Mr Tony Dobson until the annual general meeting in January. 19 tanks were entered in the club's horse aquarium competition. Mr Bob Sharp took colour slides of all the entries and these were shown at the meeting at which the judges, Mr Ken Russell and Mr Bob Deacon, commented on each tank and gave the results. Mr J. Thomas was awarded first place, Mrs J. K. Smith second, Mr J. Morris third and Mr J. Morris fourth with a tank of native marine. As a result of the holiday on the coast of North Wales Mr Sharp was able to enter a sunfish and a sea scorpion in the coldwater section of a recent club table show.

DUDLEY & D. A.S. members look forward even more than usual to their annual general meeting this month. There is a very good chance that the committee is going to propose a reduction in membership fees. 'How about that, then' says treasurer Mr Sam Croft! At the fourteenth annual general meeting of YEOVIL & D. A.S. Mr D. S. Langdon, a founder member of the society, was elected president for a second year. Other officers elected were: chairman, Mr T. C. Perry; vice-chairman, Mr M. Entwistle; secretary, Mr A. Nicholls; committee, Mr B. Stinson, Mr H. Wooding, Mr W. Reeves, Mr D. Phinn, Mr R. Gitt, Mr F. Pillon. The main decision taken at this meeting was that the club's first ever open show should be held in 1968, date to be announced later, and it is hoped that aquarists over a wide area in the south and west of the country will support it. Officials elected to run the show are: Mr J. Hullbert, show manager; Mrs T. Gilliard (22, King Street, Yeovil, Somerset); show secretary and committee, Mr B. Watts. T. O'Rourke and Mr T. Ward. The chairman recalled the club's successes at open shows throughout the year, notable wins being the W. Bodley Cup for the best fish in the World by Mr N. Wright, and the Victor Capaldi Cup for the inter-club Furnell aquarium set up by Mr D. Silver on behalf of the society at the Bristol show.

A CHANGE OF ADDRESS is announced for the membership secretary of the INTERNATIONAL MARINE STUDY SOCIETY, Mr K. Martin's new address is: 30, Lennox Drive, Saltcot, Swindon, Wilts.

'A MOST entertaining lecture on a subject concerning us all' is how DERBY REGENT A.S. describe the talk given to the club by Mr Harold Cotton of Birmingham on 'Causes of Fish Fatalities'. A wide range of causes—from asphyxiation to anchor worms, was covered. Members who did not attend should kick themselves for not doing so writes P.R.O. Mr Jubb, who goes on to say he has high praise for the high-info red-eyed tetra that was bought by Mrs Cotton at the end of the evening as 'The best pair this side of the River Derwent'. The club's annual general meeting is on 25th January at the English Fish Club, Osmaston Road, Derby by 7.30 p.m. and anyone who wishes to be introduced into the club will be made most welcome.

TOTAL points over the year in the THREE COUNTIES Bottle League results by Blackwell & D. A.S. being again the winners with 311 points (Reading, 277); 3, Didcot, 204; 4, Basingstoke, 174).

ON the strength of the success of this year's National Open Show, NOTTINGHAM & D. A.S. have already set a provisional date for the show next year (2-4th September 1968).

OFFICERS elected at the annual general meeting of DIDCOT & D. A.S. were: chairman, Mr Alec Chadwick; treasurer, Mr T. Durand; show secretary, Mr Peter Tucker; committee, Margaret Chadwick, John Trinder, Arthur Wilkinson. The new secretary is Mrs Joan M. Carlan (Green Gables, North Moreton, Didcot, Berks). Also at this meeting the following awards were announced: squarium of the year, Mr Alec Chadwick; integument of the year, Mr Peter Tucker; junior of the year, Mr John Trinder.

WHEN WAKEFIELD & D. A.S. were hosts to YORK & D. A.S. in October the visual quiz competition that was held was won by Mr D. English of the home club. The results of the table show, judged by Mr Skinner, were: cichlids and amphilophid: 1, Mr Flows (York); 2, Mr Womberry (York); 3, Mr Carey (York). Livebearers: 1 and 2, Mr Reynolds (Wakefield); 3, Mr G. H. Simmonds (York). Characins and barbs: 1, Mr Cooper (York); 2, Mr R. Flows (York); 3, Mr Pegg (York). A.O.V. 1, Mr Carey (York); 2, Mr Reynolds (Wakefield); 3, Mr Womberry (York). The Tilapia smussiana owned by Mr Flows won the best fish in show award.

The FIRST meeting proper of the newly formed WINCHESTER & D. A.S. incorporated an open class table show at which there were 17 entries. Mr J. Stillwell of Portsmouth judged the show, which was won by Mr J. M. Holland with a peacock bass; Mr James was second with a peacock bass; Mr P. Bennett (28 The Crescent, Bramshill, Eastleigh, Hants), will be pleased to supply information about meeting times and membership.

CROYDON A.S. held its 36th annual general meeting recently when the following officers were elected: chairman, Mr W. B. H. Licence; vice-chairman, Mr P. Boyce; secretary, Mr D. Crowley (180 Harrington Road, South Norwood, London, S.E.25); assistant secretary, Mr A. J. Tucker; treasurer, Mrs W. Chausard; show secretary, Mr D. Southcote; assistant show secretaries, Mr R. S. Spencer and Mr C. Chisholm; committee, Mr J. Marshall, Mr P. Tuck and Mr H. Parker.

Meetings are held on the second and fourth Thursdays of each month at the Victory Club, 237 Selhurst Road, South Norwood, London, S.E.25 at 8.0 p.m. All visitors are welcome and the secretory will be glad to supply any further details required.

NEWPORT A.S. were hosts at their December meeting to members of KEYSHAM (Bristol) A.S. in an inter-club table show. The home club proved to be the victors by 441 points to 443. Judges were Mr Brian
Light and Mr Alf Ibbotson, chairman and show secretary of Barry A.S., and individual results were:
egg layers: 1, Mr M. J. Parry (Newport, gourami, 77); 2, Mr A. J. Payne (Newport, tiger barb, 76); 3, Mrs. P. Hands (Keynsham, P. arbinia, 76). Livebearers: 1, Mr S. J. Will (Newport, tussock sword, 81); 2, Mr C. Cradock (Keynsham, red sword, 78); 3, Mr R. Powell (Keynsham, plat, 76).

Meetings of Newport A.S. are held on the first Tuesday of each month at the R.A.O.B. Club, Stow Hill, Newport and further details can be obtained from the general secretary, Mr I. E. Phillips (34 Brangwyn Crescent, St. Julians, Newport, Mon.).

... At the October annual general meeting of TROPICAL & BEA CONTRA A.S, three officials of the society remained unchanged with the exception of the chairmanship, which is now in the hands of Mr Thompson. Mrs. K. Heath (336 Mawney Road, Romford, Essex) remains secretary, Mr J. Fyne the show secretary, and Mr J. Wilson, treasurer. Prospective new members may like to know that the next meeting will be on 23rd November and on the Thursday of every other week following. Each meeting will commence with a 15-minute question-and-answer period so that new members new to the hobby will have the chance to solve any queries they may have. There will be many interesting lectures to look forward to and slide show and tape-recorded lectures on tropical fish, fish house, fish diseases, breeding etc. have already been booked for the club's annual program.

... MEMBERS OF BURTON & D. A.S. have been having a successful show season culminating in the results at the National Open Show when Mr B. Forman took four firsts and three seconds in the coldwater section and a second with a loach. Mr J. Hunt took a second in the harlequins, and a second in the livebearers breeders class. Mr J. Hunt also took the first award in the egglayers (tropical class) in the club's table show for breeders (2, Mr G. Jackson). Other results: egglayers (coldwater): 1, Mr E. Hunt; 2, and 4, Mr B. Forman. Livebearers: 1 and 2, Mr J. Hunt; 3, Master J. H. Hutton; 4, Mr H. Pointon. Meetings of the society are held on the second Thursday of each month at 7.45 p.m. at the Fox and Goose, Bridgwater Street, Burton and new members are always welcome.

... GENETICS was the subject of a first-class lecture given by Mr J. Stillwell at the recent meeting of PORTSMOUTH A.S. While the table show, for single-tail goldfish, was being judged by Mr J. Bundell of the G.S.G.B. a programme of coloured slides on brine shrimp (loaned by Hendon A.S.) was shown. Table show results were: goldfish: 1, Mr E. Binsted; 2, Mr H. Hancock, Shubunkins: 1, 2, 3 and 4, Mr W. Evans. The best fish in show award went to Mr W. Evans.

... A T.V. nature film 'Break Through' provided ENFIELD & D. A.S. with a most interesting evening at their October meeting. The breeding habits of the miller's thumb (or loggerheads) were included in the film and microscopes in the tank during filming picked up the 'clicks' made by the males to attract the females (quite similar to the noise made by angel fish during their courtship behaviour). This was followed by a quiz and discussion on fish diseases, their symptoms and cures and the problems members had in this connection.

The table show, judged by Mr B. Senior, for a.v. catfish and loach was won by Mr W. F. Parkinson with a Plecostomus, Miss C. Cole (Plecostomus) 3, Mr H. Seymour (C. myersi).

... AIREBOROUGH & D. A.S. will hold their open show on 3rd December at Guiseley Town Hall, when three magnificent trophies and 40 plaques will be competed for from aquarists from all over England.

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Tropical Aquarium Breeders Show

(Mr. G. Jackson)

THE SECOND annual open show of TROPICAL & BEA CONTRA A.S. was held at the Switchgear & Cowan Social Club, Stretford and judged by Mr. D. A. Jones and Mr. G. W. Jefferies. Mr. K. P. Parry of Merseyside won the best fish in show award with his tinfoil barb (96 points). Best breeders award went to Mr. M. J. Parry (Orton). Mr. E. Price (Gorton & Openshaw) was the winner with the most awards as his club, Gorton & Openshaw.

Individual results were:

- **Goldfish:** 1, Mr. D. A. Jones (Gorton & Openshaw, 76); 2, Mr. E. Price (Gorton & Openshaw, 73); 3, Mr. G. W. Jefferies (Gorton & Openshaw, 72); 4, Mr. M. J. Parry (Orton, 72); 5, Mr. J. H. Hill (Ashby, 68); 6, Mr. R. C. Haigh (Stretford, 65); 7, Mr. A. Middleton (Halifax, 60); 8, Mr. J. H. Hill (Ashby, 60); 9, Mr. M. J. Parry (Orton, 59); 10, Mr. G. W. Jefferies (Gorton & Openshaw, 58).
- **Goldfish (coldwater):** 1, Mr. E. Price (Gorton & Openshaw, 73); 2, Mr. D. A. Jones (Gorton & Openshaw, 72); 3, Mr. G. W. Jefferies (Gorton & Openshaw, 72). Awards: 1, Mr. E. Price (Gorton & Openshaw, 73); 2, Mr. D. A. Jones (Gorton & Openshaw, 72); 3, Mr. G. W. Jefferies (Gorton & Openshaw, 72); 4, Mr. M. J. Parry (Orton, 72); 5, Mr. J. H. Hill (Ashby, 72); 6, Mr. R. C. Haigh (Stretford, 65); 7, Mr. A. Middleton (Halifax, 60); 8, Mr. J. H. Hill (Ashby, 60); 9, Mr. M. J. Parry (Orton, 59); 10, Mr. G. W. Jefferies (Gorton & Openshaw, 58).

- **Loaches:** 1, Mr. E. Price (Gorton & Openshaw, 73); 2, Mr. D. A. Jones (Gorton & Openshaw, 72); 3, Mr. M. J. Parry (Orton, 72); 4, Mr. G. W. Jefferies (Gorton & Openshaw, 72); 5, Mr. J. H. Hill (Ashby, 72); 6, Mr. R. C. Haigh (Stretford, 65); 7, Mr. A. Middleton (Halifax, 60); 8, Mr. J. H. Hill (Ashby, 60); 9, Mr. M. J. Parry (Orton, 59); 10, Mr. G. W. Jefferies (Gorton & Openshaw, 58).

- **Cichlids:** 1, Mr. E. Price (Gorton & Openshaw, 73); 2, Mr. D. A. Jones (Gorton & Openshaw, 72); 3, Mr. G. W. Jefferies (Gorton & Openshaw, 72); 4, Mr. M. J. Parry (Orton, 72); 5, Mr. J. H. Hill (Ashby, 72); 6, Mr. R. C. Haigh (Stretford, 65); 7, Mr. A. Middleton (Halifax, 60); 8, Mr. J. H. Hill (Ashby, 60); 9, Mr. M. J. Parry (Orton, 59); 10, Mr. G. W. Jefferies (Gorton & Openshaw, 58).

- **Algae eaters:** 1, Mr. E. Price (Gorton & Openshaw, 73); 2, Mr. G. W. Jefferies (Gorton & Openshaw, 72); 3, Mr. M. J. Parry (Orton, 72); 4, Mr. J. H. Hill (Ashby, 72); 5, Mr. R. C. Haigh (Stretford, 65); 6, Mr. A. Middleton (Halifax, 60); 7, Mr. J. H. Hill (Ashby, 60); 8, Mr. M. J. Parry (Orton, 59); 9, Mr. G. W. Jefferies (Gorton & Openshaw, 58).
Dates for Your Diary

26th November. LEEDS & D.A.S. Open Day Show, (Change of date).

2nd December. FEDERATION OF BRITISH AQUATIC SOCIETIES Assembly.

3rd December. AIREBOROUGH & D.A.S. Open Show, Guiseley Town Hall, Nr Leeds, Yorks.

10th March, 1968. HUDDERSFIELD TROPICAL FISH SOCIETY 6th Open Show, Friendly & Trades Club, Northumberland Street, Huddersfield.

20th April. THURROCK A.S. 1st Open Show.

27th April. WINCHESTER A.S. 1st Open Show. Schedules available in New Year from show Secretary Mr R. Hatchett, 2146 High Street, Eastleigh, Hants.

28th April. YORK & D.A.S. Open Show.

13th May. BRIDGENEND & D.A.S. 1st Open Show.

8th June. LLANTWIT MAJOR A.S. Open Show.

PetFish Monthly, December 1967


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Show secretaries are asked to remember to follow up preliminary notifications to us with the addresses of venues, and to let us know time of benching and time of opening to the public as well as the address from which show schedules can be obtained.

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Continued on page 382.
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### HARD COVER AQUATIC BOOKS
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### ESTIMATED APPROX. POSTAL CHARGES
<table>
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<tr>
<th>Description</th>
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<tr>
<td>Aquariums, Stands, Gravel, Mastic and Rockwork at owners' risk.</td>
<td>$2 6d for orders up to 10s 0d; 4s 6d up to 20s 0d; 5s 0d up to 40s 0d; 6s 0d up to 60s 0d</td>
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<td>Carriage at cost invoiced after despatch</td>
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TERMS OF BUSINESS—Cash with order please. Fish sent by road. Tropical minimum order £7.10s., insulated container and carriage 10/-.
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