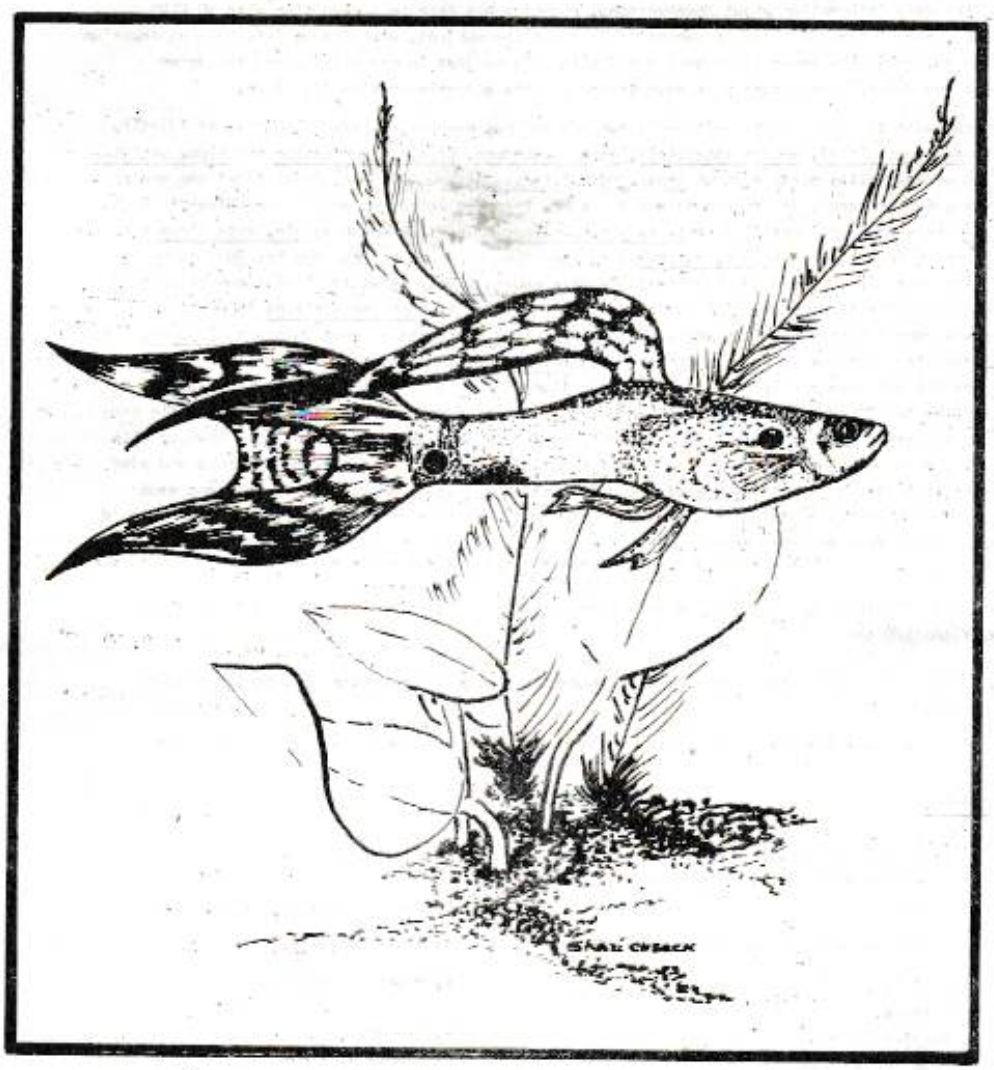
FEBRUARY 1978

April

N.G.L.S.



JOURNAL OF THE NEWCASTLE GUPPY AND LIVEBEARER SOCIETY

CHAIRMAN'S LETTER

Over the last 12 months our greatest headache has undoubtedly been the identification of some of the rarer species. While you can find reams of information about Cichlids and Characins, when it comes to A.O.S. Livebearers the information seems practically non-existant. To illustrate this point, as far as we know, the only information about Nomorhamphus hageni comes from preserved fish with NO FINS. There is also a marked lack of books on general sale about the subject, with Jacobs 'Livebearing Aquarium Fishes' being the only book known to us that deals with this subject in any detail, and the drawn illustrations are generally not much help when trying to make comparisons with live fish.

Up to now, with the help of the British Museum and various members, we have been able to identify such fish as Xenotoca eiseni, Goodea atripinis, Ameca splendens, Poecilia versicolor and Xiph. variatus variatus, and we are pretty certain about Brach. rhabdophora. As you will see, identifications are not straighforward, for instance, the fish referred to in Mr. Chambers letter on page 7 were given to me as Xiph. milleri and were also identified as Xiph. var. evelynae. The fish known as Gir. metallicus has been known to appear on show benches as Gir. cubensis, as according to descriptions they are just about identical apart from size. Could the fact that the male cubensis only grows to 1" have something to do with it? The identification of the fish currently in circulation as Quintana atrizona is now in some doubt and now we can honestly say that whatever they are, they are certainly not Quintana atrizona. The so called Indonesian Halfbank we know is definately Nomorhamphus species, but whether it is hageni or celebensis has not yet been confirmed. As yet I have found no one willing to put a scientific name to the 2 types of Porthole Livebearer, even well known publications seem hesitant to put a scientific name to these. We are trying to get positive identifications for as many species as possible, however this will take time, meanwhile our members can help by forwarding any information they come across and also by making sure that they do not allow any of their wild stock to become cross-bred as this can cause no end of problems when trying to get a positive identification, especially when they are given or sold to people who do not know they are crossed.

* *

We must apologise for the later delivery of this months publication, which is due to problems with the production of the I/D sheet.

THIS MONTHS NEWSLETTER WILL BE THE LAST ISSUED TO MEMBERS WHO HAVE NOT RE-JOINED FOR 1978, SO DON'T FORGET YOUR SUBS.

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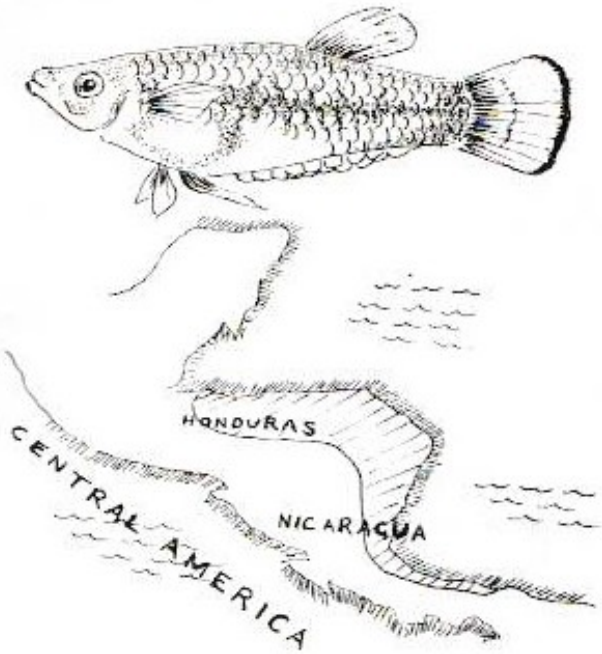
Alfaro cultratus.



KNIFE LIVEBEARER

Family	:-	Poeciliidae
Genus	:-	Alfaro
Distribution	:-	One form is found in the Amazon region of Brazil, another is found in Central America (Costa Rica to Panama)
Habitat	:-	The deeper waters of clear, stoney streams: never in larger, polluted rivers.
Size	:-	Male - 3½" Female - 4"
Colouration	:-	Basic colouration is pale brown to olive, the sides greenish-grey showing iridescent blue in incidental light. The upper half of the body in particular is covered with tiny black spots, which are less well distributed elsewhere. The body is very transparent and the backbone is visible, showing as a blackish longditudinal line. Fins are yellowish-green and the caudal has a narrow black border.
Temperature	:-	75 - 82 F.
Gestation	:-	8 - 10 weeks. (at a temp. of 77 - 82 F)
Diet	:-	Mainly live foods of all types.
Remarks	:-	Not suitable for a community tank as they are shy, although they can be aggresive. A well planted tank, with vegetation closely planted, gives them a retreat when disturbed. The parents are very cannabalistic towards the fry, so plenty of top cover should be provided also in the breeding tank.

* *

Information from "Livebearing Aquarium Fishes".

CERATOPTERIS CORNUTA.

This floating plant is a firm favourite among many aquarists and is often used in breeding tanks, as the flat leaves and long, trailing roots can provide refuge for fry.

Cultivation :- Soft to medium-hard water.
Temp. - 70-80 F.
Bright daylight or artificial light.

Propagation :- By daughter plants which are produced around the leaf edges of the parent plant.

NAJAS GUADALUPENSIS

Although this plant is often described as a "submerged" plant, it is often to be found floating in breeding tanks as protection for fry. The stems are very brittle and care should be taken when planting down.

Cultivation :- Soft to medium hard water.
Temp. - 60-77 F.
Good daylight or artificial lighting.
A sandy bottom with some loam added is advisable if 'planting down'.

Propagation :- By cuttings, which should be inserted so that two nodes are in the substrate. Cuttings will also continue to grow if left floating, as long as there is sufficient light.

UTRICULARIA EXOLETA

This species does well in a tropical aquarium. It usually floats just below the water surface and grow into dense, matted cushions. Again, this plant is often used as protection for young fish. The bladders are not dangerous to young fish, however if there are not sufficient infusorians present, which they catch, the plant can become thin and weak.

Cultivation :- Soft water. Temp - 59-84 F. Daylight or artificial light.

Propagation :- By fragmentation of cushions.

Information from - "Aquarium Plants"

"SKIN AND INTERNAL ORGANS OF A FISH" by Clark Shay. re-printed from "Nautical News"

The first layer you encounter, when examining a fish, is the slimy coating over the entire fish. This is called mucous or slime cells. This is their protection and one of the most important features of our finny friends. This coating prevents bacteria and such from penetrating the Epidermis, which is right underneath the slimy coating. This coating also helps them speed through the water as it slides over this mucous coating. This is why it is important that when a fish has the protective coating taken off them, such as being attacked by another fish or rubbing up against a sharp object in your aquarium, precautions should be taken to prevent the bacteria from penentrating the Epidermis. If a fish should jump out of the tank, before you retrieve it, take a few precautions and do not panic. Wet your hands with some tank water and drop some water on the fish to keep it wet, then reach for a net and wet it and then retrieve the fish. This will protect the mucous from being rubbed off or sticking to a dry surface, which it will. This action, if initiated will prevent a fungus infection from starting. It is still always wise to put in a treatment of "FungiStop" or other such remedy, if you think that the mucous has been removed. This is their protection, so let us help protect it for them.

Underneath this comes the Epidermis, or outer layer, resting on the Dermis. The Epidermis is made of Epithelial cells, arranged in layers one above the other, (hence called the Stratified Epithelium). These cells are shed continually at the surface and replaced by the proliferation of cells in the deepest layer. Interspersed between the Epithelial cells are Mucous cells, which produce a mucoid secretion that forms the slimy protective coating covering the fish.

The many beautiful colours and colour patterns seen in the fishes are produced by pigment cells lying in the Dermis, which supports the Epidermis. These cells are named according to the pigments they contain. Thus, Melanophores contain brownish-black pigment called Melanin; Erythrophores contain red pigment (Pterins); Xanthophores contain yellow pigment (Pterins also) and Guanophores or Iridophores contain crystals of Guanin, which reflects or refracts the light. Thus the metallic look of Goldfish, the mirror-like silvery surfaces of many fishes, and the red, green and blue iridescences in Fighters are largely due to these cells, assisted in some instances by the over-lying coloured pigment cells.

Fishes can change colour from one moment to the next. We have all seen Angels at one moment display beautiful dark bands, which disappear in a few moments if the fish is frightened. This kind of rapid change is achieved by the movement of Melanin granules within the cells. When the granules are dispersed or expanded, pigment looks black. When the pigment comes together to form a small clump around the nucleus the fish goes pale.

The deeper placed Dermis is made up of connective tissue (Fibroplasts and Collagen Fibres) and blood vessels. The scales (mainly bony) lie in pockets in the dermis and in fact arise from this connective tissue. It will be noted that the scales do not stick out of the skin like hairs; each scale is covered by the Epidermis. The scales overlap and thus form a protective, flexible armour, capable of withstanding blows and buffeting. The morphology of scales is complex and many variaties occur, but only 2 main types concern us here. Both are round and oval flat plats, but in one variety (Ctenoid scales) one edge is serrated, while in the other (Cycloid scales) there is no serration on any edge. In some families, scales are lacking entirely, ie: Naked Catfishes. In others they are so small that they cannot be seen with the naked eye. In armoured catfishes and some others the scales are replaced in rows and scale counts play an important part in distinguishing closely related species. Two counts are usually made, a longditudinal and a transverse. The former is carried out along the length of the body, usually along the lateral line, and the latter at the greatest height of the body.

Surface views of scales seen under the microscope reveal rings similar to those in tree trunks and indicate periods of active growth and relative quiescence. As such they can give a rough idea of the age of the fish.

RESPIRATORY SYSTEM

Aquatic respiration is carried out by means of gills lodged under the gill covers. The walls of the Pharynx is perforated by 5 slit-like apertures. The tissue between the slits is referred to as a Gill arch; thus on each side of the fish there are 5 gill slits and 4 gill arches. On the gill arches are mounted the Gills, a delicate system of blood vessels covered by a very thin Epithelium through which gaseous exchanges can occur. The actual respiratory cycle can be easily observed in the aquarium, where one can see the fish alternatively shutting and opening its mouth and gill covers. What happens during such a cycle is as follows: The fish opens its mouth and water is sucked in. Next the mouth shuts and muscles in the mouth begin to contract. This closes the oral valves so that water is forced through the gill slits, over the skin and under the gill covers, which are now moving outward. Two skin folds at the

posteria edge of the gill covers and the gill covers themselves act as valves hindering the passage of water in the reverse direction when the fish opens its mouth. Never the less, fishes can reverse the flow and expel water from the mouth to assist in clearing the gills of debris.

Gaseous exchanges probably occur over the skin of fishes. While in young fry before gills have developed, this is vital and in small fishes it may be important, its occurance in large adult fishes is doubtful. Some fishes have developed accessory organs to utilize atmospheric oxygen. One such, the Labyrinth organ, is the intestinal respiration by which oxygen is removed from a quantity of air swallowed by the fish.

ALIMENTARY SYSTEM

This is best regarded as a long, tube-like structure extending from mouth to anus. The alimentary canal can be divided into 3 parts: (1) The fore-gut - made up of mouth, pharynx and oesophagus; (2) The mid-gut - made up of stomach, duodenum and ileum; (3) The hind-gut - a short segment where faeces accumulate before excretion.

Carnivores have a shorter mid-gut than herbivores. Into the mid-gut are poured secretions from the liver and the pancreas, (absent in some fishes) The liver is a large reddish-brown organ that can be seen and easily recognised: It is sometimes fatty, in which event it is yellow in colour. The function of the mid-gut is to digest the food and absorb the simpler substances derived by this process.

CIRCULATORY SYSTEM

The main function of this system is to transport essential metabolites and oxygen to the tissues. This is achieved by pumping blood along a system of vessels. The motive force for this circulation is provided by the heart. Venous blood is first collected into the Sinus Venosus, from here it goes to the Auricle, and thence to the strong, muscular Ventricle, which pumps out the blood into the main artery, called the Ventral Aorta. From here the blood proceeds to the gills (via branches of the Ventral Aorta, known as the Afferent Brachial Arteries). These arteries break up into capillaries: passing through the gills the blood gives up Carbon Dioxideand picks up Oxygen. The oxygenated blood now flows from the Afferent Brachial Arteries into 2 large vessels on the left and right respectively. Cerebral arteries carry blood forward, and the 2 vessels unite behind to form the Dorsal Aorta, which distributes blood to other parts of the body. The impure blood is collected by a system of veins and brought back to the Sinus Venosus, thus completing the circulation.

KIDNEYS

Excretion of nitrogenous waste products from the blood is carried out by the Kidneys, which lie just under the vertibral column. Many and varied morphological differences are seen in the Kidneys, too numerous to detail here. The Kidneys terminate in Ureters, which lead the urine to one or two openings just behind the genital opening.

BRAIN AND SPINAL CORD.

The forebrain in man is large and highly developed: in fishes it is small and serves the sense of smell. The spinal cord and other parts of the brain, like the Cerebellum and the Midbrain which serve the locomotor system, are well developed.

OLFACTORY SENSES

In most fishes the sense of smell is very highly developed and is probably the most important to them when seeking out food, as against the sense of vision. In the Teleostei, the olfactory pits are responsible for the sense of smell. Two of these are found in each fish, situated on either side of the snout, and communicate to the exterior usually by 2 openings, an anterior inlet and a posterio outlet. In certain fishes such as the Cichlid, the pits communicate to the exterior by only a single opening. It will be noted that the fishes nose does not connect with the respiratory system as in man. The Olfactory Pouch is lined with a membrane (thrown in folds to increase its surface area) containing smell receptors (Olfactory cells) and numerous nerve fibers which convey impulses to the brain, there producing the sensation of smell. Odour perception in all animals is a chemically produced phenomenon. Thus the odour producing substance has to dissolve in the layer of mucus in the human nose before it can excite our Olfactory cells. In the case of fishes the substance is already dissolved in the surrounding water. Thus in the final analysis there is no fundamental difference between the way we smell things and the way fishes do, for all olfaction is aquatic.

ALBINISM by Michael Ruffell. re-printed from "Fish Forum"

The colours of our aquarium fishes are of great importance to us from the point of view of pleasing our (and the judges) eyes. However in nature colour plays a far more important part in the actual survival of the fish.

The colours of our fish are obtained in two ways, firstly structurally, and secondly pigmentation. The structural colour depends on reflected light, especially noticeable in Killiefishes of the genus Procatopus, some tetras and small cichlids. The secondary type is due to pigments in the cells.

Albinism is the lack of these pigments which give the eyes and skin their colours. I am sure that everyone has seen an albino of one sort or another, the commonest being the Albino Molly. The albino is instantly recognisable, it has pink eyes, a pinky-white skin and white scales. The only colours exhibited are in the eyes which are pink due to the blood vessels showing through.

The question of why albinos occur was largely unanswered until fairly recently but it is now at least partially understood. In normally coloured fish the pigments are found in the cells and the main pigment is called Melanin. This pigment is in the form of small granules which can be moved, seemingly at will, to various parts of the cell, intensifying or reducing the colour of the fish. The Melanin is contained in special cells called Melanophores. The Melanin is formed from a colourless substance called Tryosine which is acted upon by an enzyme called Tryosinase, this causes the black colouration to develope. But in the albino certain peculiarities takes place whereby a chemical gene is developed which stops the enzyme going to work on the Tryosine and thus results in no black pigment being formed. This gene thus causes certain albino characteristics to occur and when a double dose of the gene occurs full albino characteristics are found. Thus albinism is hereditary and as the amount of albino gene can vary, the number of albino traits can similarly be obtained. Examples of this are shown in Red-eyed Swordtails and Brown Mollies.

With the fact that albinos do occur in nature you might be wondering why they are never imported. There are a few contributing factors, for example, in the wild a fish must blend with it's natural surroundings and a white fish such as an albino is quickly seen by any predator. Ordinary fishes do not recognise albinos as one of their own species, usually the albino has poor eyesight due to too much light entering the eye.

Albinos do occur in cats (the four legged variety), Siamese cats are semi-albinos, there are albinos in mice, rats, guinea pigs and man. One man in every twenty thousand is an albino.

* *

QUIZ

The following questions are an example of your Chairman's weird sense of humour. Just to give you a clue to how the questions work, (and the Chairman's mind) here is one of the questions, with the answer : I am a very religious fish - Cardinal Tetra.
Just to make it more difficult they are not all flowerers.

1. As insects go, I'm rather small.
2. A rather beautiful time of day.
3. I wear a dinner jacket at the Pole.
4. I partner Columbine.
5. Drop me and I break.
6. I'm happy without a man
7. Birds have a whole one.
8. I take my name from Quasimodo.

LETTERS.

Has anyone noticed how thin X. alvarezi and X. splendens females go after they have given birth? Having managed to breed both these species successfully during the winter it rather alarmed me to see just how pinched the females appeared after they had given birth. The first time it happened I was rather afraid that they were about to waste away, but having observed the phenomenon on 5 separate occasions, (twice with X. alvarezi and 3 times with the Amazon) I am now used to it.

No one seems to have mentioned this in any articles on the fish and it is a rather alarming sight to the newcomer. The walls of the stomach seem almost to press together and stay that way for about a week while the female hides away in the plants and keeps away from the male as much as possible. She seems to eat very little during this "rest" period which usually take place between 6 - 10 days, but after this time she comes out of hiding and begins feeding and courting once more.

I wondered if the point was worth mentioning in the Newsletter to allay the fears of members who may only recently have obtained these species and may be as alarmed as I was when they breed.

Mr. G.R. Durham,
Preston, Lancs.

Editors Note.

This is a point worth mentioning and I think it is advisable, if you have the spare tank space, to allow a female Goodeidae who has just given birth a short breathing space of about a week to 10 days in a tank of her own, before re-introducing her to the male for further breeding, as this will give her the chance to build up her body weight and improve her general condition.

* * * * * * * * * * * * * *

Your smaller fish, which died naturally, is Poeciliopsis paucimaculata JUDGING BY THE GONOPODIAL DETAILS and it does seem to fit the description of this species in Jacobs pretty well. What a pity he doesn't give a picture or drawing of it.

Your larger fish which I had to anaesthise in order to feed it, (I hate extinguishing them just for that) is Xiph. variatus variatus, I don't think it is a hybrid because it doesn't seem to show any of the hybrid abnormalities which are so typical of interspecific crosses in Xiphophorus. At the same time it doesn't, at first, look deep bodied enough for the Xiph. variatus that I am used to. I know that this species is very variable and Rosen, 1960 says - "X. v. variatus in the Rio Axtla (Rio Panuco system), Estero Tanaachin system, Rio Cazones system and Rio Nautla system are the most slender bodied" The gonopodium matches that of X. v. variatus; there is detail differences even within the sub-species and your specimen lies within it I think.

A convincing feature to me, is the colour pattern, the distribution of longitudinal zig-zags and the thin oblique bars, 3 or 4 in number, behind the pectoral fin and before the dorsal fin, although admittedly these latter come and go according to the mood of the fish.

Under the microscope I find micro-melanophores in a kinder-edge band on the caudal fin. There is then a clear band, lemon-yellow tinged, then the micro-melanophores come in again and grade onto the caudal peduncle. This colour pattern is different from the one I thought usual in this species which consists of larger spots of different shapes. Is this the sort of maximum size to which these fishes grow, in other words have I got a fully adult fish and how do the markin s vary with age? Does anyone know where exactly they come from, this would help to make the identification more certain, although I am pretty well convinced of it now.

Mr. J. Chambers,
Dept. of Zoology,
British Museum (Natural History)
Cromwell Road,
London. SW7 5BD.

I would like to thank Mr. Chambers for the help he has given us in identifying the above species. We were given the Xiph. v. variatus quite a while ago and were told that they were Xiph. milleri, but after hearing one or two other opinions as to their identity, (Xiph. variatus evelonae or hybrid crosses) I sent a young male to Mr. Chambers to see if he could help. The male I sent down was not fully grown, (Males re ch 2½") and unfortunately I do not know their original source, so if any of our members can help Mr. Chambers by providing him with a larger male and with the 'source', it will be a great help.

GUPPIES GALORE. by Ron Hill. N.G.L.S.

I've had a stern warning from our Chairman that my poems are including too much sex and at times could be libellous. I'm not sure what he means by this, because I never named the Judge, (and in any case he was colour blind).

To be on the safe side, here is this months poem in brackets. (**********).
I hope you all liked it, the wife did. I THINK I'VE DONE IT AGAIN!!

Seriously though, this months offering is very sparse due to me having had an enormous amount of work to do in attempting to form a new section of the FANCY GUPPY ASSOCIATION in the North East. The first meeting will be held at "THE DUN COW" GATESHEAD, on Tuesday, 31st January at 8-00 pm, and then hopefully, at monthly intervals. Full details can be obtained from me. I was a bit worried about mentioning the F.G.A. in this newsletter, but I was encouraged to do so by the Chairman and all the members of the N.G.L.S. who attended the recently held A.G.M. This is how it should be, Specialist clubs should always help each other. Thank you all.

* *

In one of my previous articles I mentioned that I put the gravid female into a separate tank to have her young. There are different methods of trying to make sure that the female doesn't eat her own young, some of the top breeders use breeding traps, some use plenty of plants, and yet others find that in some strains the mothers leave the fry alone.

This is what I do.
First of all I obtain some plastic bags. Fig. 1.
Next I cut off the bottom and one side. Fig. 2.
I now cut the bag into strips as per Fig. 3.
Afterwards I roll them as shown in Fig. 4.
I fasten the tops with an elastic band, the strips spread out amongst the water and I use enough to half fill the breeding tank. I find that very few fry are lost using this method.

One of our local members uses old recording tape, this does the job quite well, but I'm afraid to use it in case it happens to spoil the water. If anyone else has tried it for any length of time I would like to hear from them.

FIG. 1.

FIG. 2.

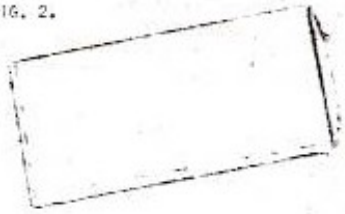
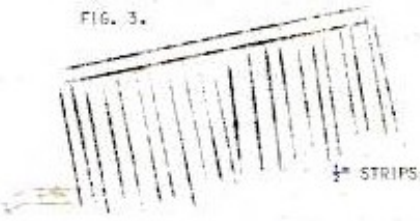


FIG. 3.



½" STRIPS.

CUT TO WITHIN ½" OF TOP.

FIG 4.

ROLL INTO CYLINDER AND FASTEN WITH ELASTIC BAND ROUND THE NECK.

DEEP FREEZE YOUR OWN DAPHNIA. by Gordon Martin. N.G.L.S.

The method I use is to carry tap water in my buckets and put the freshly caught daphnia in it. I then rinse it in a net under the cold water tap before putting the daphnia in the small ice cube moulds. The moulds are then placed in the freezer. This is a handy method for feeding daphnia during the winter.

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TO MY REFRIGERATOR. by Heather Bessler. re-printed from "Finny Frolics".

Oh, my beauty, you stand so tall,
Your gleaming countenance against the wall!
A sparkling tribute to the ingenuity of man,
Made to store every size of bottle and can.
Teasingly you hide goodies galore,
Behind your copper double door.
Advertisments entice the eye and waist,
With pictures to tempt my gourmet taste.
With no more delay, let's look and see
What goodies you have stored for me!
Now open the door that's so nice,
And let us see what's on the ice.
Those little packages so long and thin,
Have millions of frozen brine shrimp within.
There on a shelf just now discovered
Is ground beefheart, carefully covered.
Other containers look so spartan
Like cottage cheese or yogurt carton...
But MAYBE they'll hold a delight...
So open the lid... Oh! see the fright
Of worms trying to hide with a wiggle,
While my hysteria begins with a giggle.
An innocent looking paper sack,
Is hiding away in the back.
Bring it forward and let us see
What on earth it might be.
Inside is a plastic bag
With no identifying tag,
Hold it up to the light and see
A lively daphnia community!
There is one last shred of hope
Before I'm to the end of my rope.
The pull-out vegetable drawer
What on earth could it be used for?
What kind of treasure might it hold?
Open it and the story is told.
There's only spinach for a finny friend
And this is really the livin' end!
My refrigerator has every goody you'd wish
If only you are a hungrey TROPICAL FISH!!.

* *

NOTES ON XENOTOCA ELSENI by Ron Wilson. N.G.L.S.

The following notes are based on my experiences with 2 pairs of X. elseni I obtained approx. 9 months ago.

CONDITIONS.

The 2 pairs were housed in a tank of 30" x 12" x 15". Water is moderately hard and alkaline at a temperature of 78F. The surface is heavily vegetated.

FEEDING.

The voracious appetites are satisfied by the following (in order of apparent acceptability):- Whiteworm, Bloodworm, Earthworm, Daphnia, Aquarian, although just about everything is acceptable.

BREEDING ETC:

Copulation takes place frequently, but always after water changes. The female must be interested though. The gestation period in my fish ranges from 52 - 55 days. The brood sizes have ranged from 8 - 15, although the females are still young and the trend seems to indicate bigger broods with age. The young are sexable to the casual eye at 4 weeks, although I suspect them to be sexable at birth. The fry also carry an 'umbilical cord'. This seems logical as all Goodeidae nourish the unborn young.

BEHAVIOUR.

When housed by themselves dominant fish appear, but not at too much expense to the others. However, the dominated fish do grow less quickly.
With other species they are sometimes more aggressive, fin nibbling being a favourite activity.
They seem not to bother with their own offspring after about an hour after birth, although I have not seen fry eaten. The brood sizes above indicate not young, although I suspect the gross figures to be very similar.

EXCHANGE COLUMN.

Mr. G. Martin,
29, Brooknell Gardens,
Chapel House Estate,
Newcastle upon Tyne, NE5 1BB.

Offers - Gambusia affinis holbrooki, Poec. melanogaster.
Wants - Poecilia nigrofasciata.

Mr. J. English,
Henderson Filters,
Throckley,
Newcastle upon Tyne.

Offers - Anoas splendens, Xiph. montezumae.
Wants - Poec. nigrofasciata, Pristella intermedia.

Mrs. J. Renton,
'Halfbeak House',
146, Chillingham Road,
HEATON,
Newcastle upon Tyne, NE6 5RU.

Offers - Limited number of Poec. wesiolor and Xiph. variatus variatus.
Wants - Pristella intermedia.

Mr. Rhodes,
6, Woodside Road,
Hunmoet,
ACCRINGTON,
Lancashire. BB5 6HW.

Offers - 1 electric pH meter, (recently overhauled) with new probe, pH4 & pH9 buffer powders, de-ionised water (if required) and measure.
Wants - A range of unusual livebearers. (In pairs)

Mr. G. B. Durham,
12, Strathfield Drive,
Longridge,
PRESTON,
Lancs. PR3 3HP.

- is looking for colour slides to help illustrate a book. The slides will be copied and returned to the owner & full acknowledgement will be given.

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SHOW NEWS.

Heywood and District Aquarist Society are holding their Annual Open Show on Sunday, March 19th, 1978 and there are 13 Livebearer Classes on the schedule. Further information can be obtained from :- Mr. J. Ridley, 53, Miller Street, HEYWOOD, Lancashire.

Basingstoke & D.A.S. are holding another ALL LIVEBEARER SHOW this year on July 22nd. Further details will follow at a later date.

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DON'T FORGET TO RE-NEW YOUR MEMBERSHIP. SEND YOUR SUBS TO THE TREASURER, MR. J. ENGLISH, HENDERSON FILTERS, THROCKLEY, NEWCASTLE UPON TYNE, OR TO THE EDITOR.

LIST OF SPECIES BROUGHT FROM GERMANY BY MR. KENWOOD LAST OCTOBER.

These species are NOT available for distribution at present. When they are available they will be advertised in the Newsletter and will be available to N.G.L.S. MEMBERS ONLY.

Poecilia sp?.
Poecilia (Poecilopsis?) vivipara
Neohetorandria umbratilis
Neohetorandria tridentiger.
Xiphophorus maculatus (Wild - with red eye)
Alfaro cultratus
Poecilia dominicensis
Poecilia melanogaster.
Xiphophorus variatus (Albino)

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