

The Aquarist

and Pondkeeper

DECEMBER, 1960



MONTHLY
Vol. XXV No. 9

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THE AQUARIST



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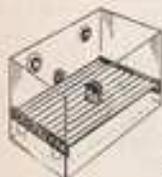
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The AQUARIST AND PONDKEEPER

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VOL. XXV No. 9

1960

Editorial

THE Case of the Railway Goldfish Deaths caught the interest of newspapers recently. It was the subject of a question put by the Member of Parliament for Barnsley to Mr. Ernest Marples, Minister of Transport. Why, it was asked, did 4,800 goldfish in polythene bags, which had been flown from Italy in 14 hours, take 3 days to reach Barnsley by train from London? Because of the delay the fish were dead when received by the owner of the pet shop to which they were sent. The British Transport Commission admitted that the delay was due to "failure to follow the procedure which had been laid down for dispatching consignments of this kind." In one report the owner of the goldfish was quoted as saying that the goldfish had cost him £85, i.e., less than fivepence each, which when the air-transport costs are allowed for, provides an interesting indication of the price at which the Italian fish farmers are able to produce these fish.

ALGAE so plague the lives of aquarists that most of us are ready to believe the worst that could be said about these tiny forms of plant life. However, how many would accept that algae can cause disease and death in fishes by acting as internal parasites? A report from a West Virginian fisheries laboratory published in *The Progressive Fish-Culturist* (U.S.A.) describes how a number of swordtails and kissing gouramies from a Florida fish farm, at which many deaths were occurring, were found to have a green alga within the tissue of skin, gills and internal organs. This alga was found to resemble a European species (*Mucophelus cyprinus*), and is not the first type to have been recorded as a fish parasite in North America.

A Happy Christmas
to all our readers from the Editor
and Staff of *The Aquarist*



Cuttings of *Hygrophila polysperma*

MANIPULATIVE pruning of species which are planted as cuttings often yields the finest bushes of foliage to be seen in aquaria. Species from which cuttings may be taken resemble each other in their mode of growth. All have erect herbaceous or woody stems bearing leaves, each of which has in its axil a lateral bud which is inhibited by auxin-like hormones produced by the apical bud. This feature is also shown by many terrestrial plants; in both aquatic and terrestrial plants the precise details of the physicochemical mechanisms whereby the inhibition is maintained or removed are still obscure.

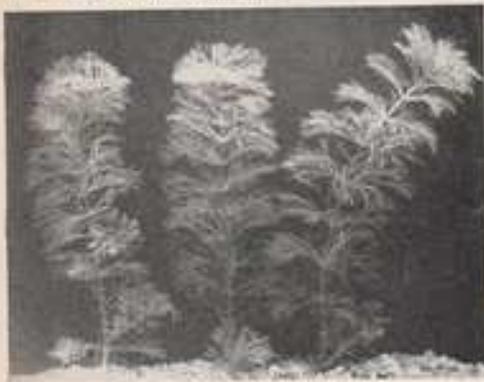
The inhibition is more or less powerful depending on the species; the natural growth habits of different species show different degrees of lateral branching. But whatever the natural state the removal of the inhibition, and hence the promotion of lateral branching, is accelerated by the removal of the apical bud. Species suited to propagation by cuttings are also characterised by the absence of persistent primary roots, the continuous development of adventitious roots from the lower nodes of the stem, and a fast rate of growth. Although their ease of cultivation

Fast-Growing Tropical

by C. D. SCULTHORPE

renders them excellent plants for the novice the decorative effects which may be achieved with them appeal to even the most dilettante of aquatic-plant connoisseurs.

The family Acanthaceae contains three genera of well-known aquarium plants: *Hygrophila*, *Nemaphila* and *Synanema*. The genus *Hygrophila* contains some 20 species originating in the hotter countries of the world; the two post-war introductions to Europe, *H. polysperma* T. Anderson and *H. salicifolia* Nees, come from India and both will form bushes of pale-green foliage which may be used to fill the corners and to mask the sides of the tropical aquarium. *H. polysperma*, which is sometimes erroneously referred to by European dealers as *Hydrophila* or *Osagrasia*, has decussate leaves (i.e. opposite leaves but with successive pairs orientated at right angles to each other) on thin smooth and usually herbaceous stems. A detached leaf often possesses some or all of the minute axillary bud and, if allowed to float, it will develop into a young shoot. The tiny insignificant flowers of *H. polysperma* are sessile and rose-purple in colour. This species tolerates a wide range of temperatures, light intensities and rooting media. Production of the adventitious roots is accelerated, as in the growing of most cuttings, by stripping off a few of the lower leaves before planting the stems. *H. salicifolia* is a larger species with long pointed linear-lanceolate leaves.



Cuttings of *Limnophila heterophylla*

Young specimen of water wisteria
(*Synanema triflorum*)



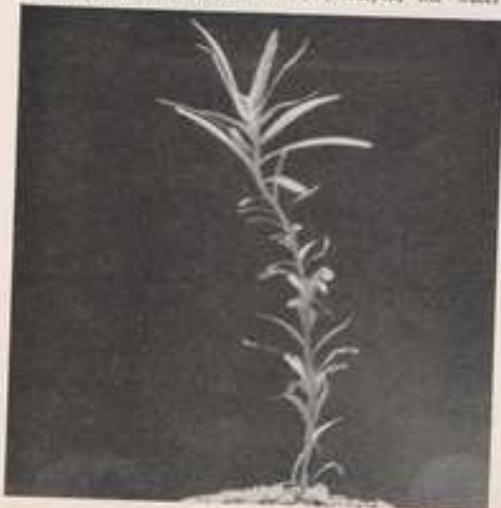
Aquatic Plants

(Photographs by the author)

The related species *Najas stricta* (Vahl) Nees, commonly known as giant *Hydrophila*, originates in several countries of south-east Asia and is a large versatile plant. Juvenile leaves are lanceolate in shape, but the more mature ones are elliptical; the colour is usually pale green. Though slender and herbaceous when young, the stems of mature plants develop anatomical characteristics of woody stems. *Najas stricta* branches profusely and soon forms a luxuriant bush; its only disadvantage is that the leaves occasionally disintegrate in small areas.

Undoubtedly the most useful decorative plant to have become available in recent years, *Synsphaera triflorum* (Roxb. ex Nees) O. Kuntze was introduced and named water wistaria by Shirley Aquatics Ltd. The species shows a leaf form ranging from lanceolate or oval to indented or deeply divided and this variation is often displayed by leaves of different ages on just one plant. There is a superficial similarity between the dissected foliage and the foliage of the Indian fern, *Cyatopteris thalictroides* (L.) Brongniart. The water wistaria branches profusely without the removal of the apical bud and very rapidly develops into a beautiful bright green bush. It tolerates a wide range of water conditions and thrives in almost any rooting medium.

Rorippa nasturtium-aquaticum (L.) Hayek, the water



December, 1960



Left, *Bacopa monnieri*; right, *Bacopa caroliniana*

nasturtium, resembles the water wistaria in superficial appearance as a result of the equally variable leaf form and similar colour; it, too, produces aerial leaves differing from the submerged ones in having a thicker, sometimes hairier, texture and darker-green colour. The water nasturtium differs, however, in being more widely distributed, in having an even wider temperature range, which enables it to thrive in coldwater and tropical aquaria, and in being a rosette plant with all the leaves produced from a short basal stem rather than on a long vertical stem. It is not related to the water wistaria and it belongs to the great family Cruciferae.

The large family Scrophulariaceae, which includes genera of common garden plants such as *Antirrhinum*, *Nowelia* and *Pentstemon*, includes two genera of important aquatic plants, *Bacopa* and *Limnophila* (*Ambulia*). The two species of *Bacopa* commonly used by aquarists, *B. monnieri* (L.) Wettstein and *B. caroliniana* (Walt.) Robinson, originate in the temperate regions of the Atlantic coast of North America and are therefore suitable for both tropical and coolwater aquaria. *B. monnieri* is a semi-aquatic species with slender stems bearing small, obovate, opposite leaves which are rather fleshy in texture and mid-green in colour. The species blooms when it is grown in shallow water and each flower has a calyx of five distinct sepals and an almost regular corolla with five lobes in the form of a little white bell. *B. caroliniana* is a larger species with thick ridged stems, which are often hairy, and blue flowers. The foliage usually emits an odour as of citron and, like that of the previous species, becomes tinged with a reddish-brown pigment at lower temperatures and under strong natural illumination. Both species are easily propagated by cuttings, which will rapidly take root in coarse sand or gravel.

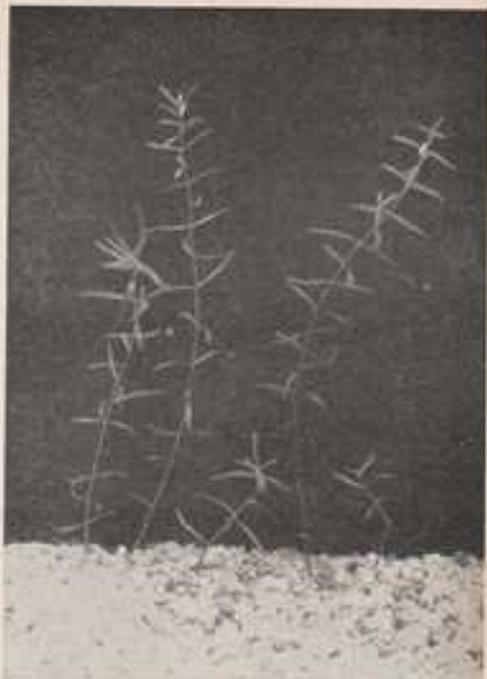
The *Ambulia* species are aquatic or semi-aquatic herbs

Cutting of *Heteranthera zosterifolia*

as *Eichornia* (water hyacinths) and *Potamogeton* (pickerel weeds)—the Pontederiaceae, comprises about ten aquatic and semi-aquatic species distributed throughout North and South America. The Brazilian species *H. zosterifolia* Martius has long slender stems clothed with pale-green smooth leaves which may reach a length of 24 to 3 inches when the plant is growing strongly. When the species reaches the surface it often produces darker-green aerial leaves with glossy surfaces; it will also bloom in a good light, forming above the water small blue flowers in a herbaceous spathe. The structure of these flowers clearly shows the systematic relationship of the species to the other genera mentioned above. The North American species *H. graminea* Vahl has sessile linear leaves of pale green and surface flowers which have golden perianths. Both these species multiply rapidly and are easily cultivated since they will thrive in a sand or gravel rooting medium and under normal artificial light. Of the two, *H. graminea* is the more tolerant of low temperatures and may be successfully grown in coldwater aquaria.

Tillandsia recurvata Hooker, belonging to a genus dedicated to Till, an eighteenth-century Italian botanist, is distributed over most of Australia and nearby islands and is useful in tropical and coldwater aquaria. It is naturally a bog plant but it suffers no decrease of growth rate when it is submerged and indeed soon forms dense thickets of foliage rising to a height of 10 or 12 inches. It has opposite spiky leaves which are brilliant green and borne at an acute angle to the stem rather than an obtuse one as the specific name implies. Some authorities have considered it necessary to remove this species to the related genus *Crassula*, calling it *Crassula intricata* (Nees) Ostenfeld.

The genus *Ludwigia*, though comprising a large number of species, affords few really suitable aquarium plants. It is essentially a genus of temperate regions and only one species, *L. palustris* Gil., is found in tropical Africa. One admirable aquarium species, with a temperature range of 60° to 80° F, is *L. arcuata* Walter, commonly known as the needle-leaved *Ludwigia*. It is a semi-aquatic species whose



Ludwigia arcuata



Young specimen of *Labeia cardinalis*



Cabomba caroliniana var. *paucipartita*

submerged stems bear short, very narrow, bronze leaves which, like those of other *Ludwigia* species, become suffused with a red pigment in cool water and under good natural illumination. Cuttings grow rapidly once they are established in the compost and, on reaching the surface of the water, will produce large golden-yellow flowers borne on long stalks.

One of the lesser-known species of bog plant which may be propagated easily by cuttings is the North American variety of *Lobelia cardinalis* L., which, at certain stages of its growth closely resembles the commonly used *Ludwigia natans* Elliott. When they are first obtained, cuttings of this species of *Lobelia* frequently have a rosette form, with leaves consisting of broad oval blades borne on long petioles. Once established in the aquarium, the plant often loses this appearance as the main stem begins to grow, and the leaves become smaller and more rounded, and are borne on much shorter petioles. Under a strong light the ascending shoots show a tendency to emerge from the water but this may be prevented, and the plant converted into a stout, attractive bush, by removing the apical buds and encouraging the development of lateral branches. If the shoots are allowed to emerge, terminal racemes of pinkish-rose to red flowers will eventually appear.

Several of the species I have described in this article and in previous ones show plant movements. For example, sleep movements are displayed by *Synspha triflorum*, *Myriophyllum proserpinacoides*, *Najaspha stricta*, *Pistia stratiotes* and *Linnæophila stricta*. Preliminary observations

have shown that the closing and opening of the apical foliage of these species does not always coincide with either the fading and brightening of natural light or the switching off and switching on of artificial light. Controlled experiments with clonal material, i.e. specimens of identical genetical constitution derived by vegetative multiplication, of each species under different periods of light and dark are required to study this phenomenon. It may then be possible to interpret the results both in the context of the light fluctuations occurring in the natural habitats of the species, and in the framework of some hypothesis based on the principle of diurnal rhythms. Most aquatic plants which produce surface flowers show various types of post-floral movements. For example the female flower of *Elodea* species and *Vallisneria* species is drawn downwards by the contraction of the stalk, or peduncle, and by the weight of the developing fruit. In species of *Nymphaea* and *Gobospha* the flower stalk bends over until the ovary and decaying perianth are some distance below the surface of the water. It is reasonable to assume that for normal development to occur the fertilised ova of the flower must be submerged. The movements are assumed, without any critical evidence, to be caused by a redistribution of the auxin-like hormones which are presumed to be present in the flower stalks. Goebel considered that the post-floral movements changed in direction with the changing metabolism of the flower and fruit, and did not think that they had much biological significance. Here again, there is a need for experimental work.

AMERICAN RAT SNAKES

by ROBERT BUSTARD

SNAKES discussed in this article belong to the genus *Eloph*, which is well represented in the United States. Many collectors will already be familiar with these snakes through the European members such as the oescolapian snake (*Eloph longirostris*) and the four-lined snake (*E. quadrilineatus*). Recently, when writing about king snakes, I listed the important attributes of snakes that were worthy of a place in the vivarium; the members of this genus possess them also. The only one on which they could be faulted is their lack of docility, since many specimens, at least when newly purchased, are apt to snap at their owner. This trait, however, should not deter the enthusiast, since it is met with in most constrictor snakes. Their attractive coloration, and the manner in which they quickly adapt themselves to vivarium life, makes them most desirable specimens.

The yellow rat or chicken snake (*E. obsoleta quadrivittata*) and the black rat snake (*E. obsoleta obsoleta*) require identical treatment and do well together. Both grow to about 5 feet so should be housed in a vivarium about 36 in. by 24 in. by 24 in. They are active snakes and can climb well. The yellow rat, as its name suggests, is yellow, being often a bright orange-yellow shade. It retains four faint longitudinal brown markings. These are more conspicuous in baby specimens and until the life history was known immature specimens were often considered to belong to a different species, so different was their appearance. This juvenile colour scheme is common to many snakes, and the South African mole snake (*Pseudaspis com*) is another good example. The young specimens on hatching are blotched (this may be a case of disruptive coloration

being useful camouflage); as they grow they slowly assume the adult hue.

Another handsome snake requiring the same conditions in the vivarium is the red rat or corn snake (*Eloph guttata*). This is a magnificent creature, the ground colour being rich orange and the dorsal region has frequent red blotches which extend well on to the sides. These are edged with black, and black markings also occur interspersed with the orange on the sides. Ventrally it is white with some black markings.

Vivaria for Constrictors

My vivaria for these constricting snakes are covered with a good layer (about 3 inches) of dry sand as usual, and on top of this I place dry moss and some heather. Branches are provided, as all these snakes are good climbers and the pool is large enough to allow them to lie in it. They will seldom enter the water normally, although they drink frequently, so the water should always be kept fresh. When they are about to slough, however, at which time the eyes are decidedly bluish, owing to the old skin which covers the eyeball, they frequently enter their pool and rest largely submerged for a day or so, thus softening the old skin and making the moult easier. This is most likely to happen after a journey or when newly purchased. When settled down in the vivarium and in the best of health they often slough in one piece without first entering the water. As with all of their order their colours are at their best soon after sloughing. The best temperature for them is about 75°F during the day, falling to 55 to 60°F at night.

In nature these snakes are abundant around human

habitations, especially farms, where they are attracted by the mice. All feed predominantly on mice and should therefore be protected. They are voracious feeders and will follow the rodents down their burrows and eat them and their young. The chicken snake receives its name because it is said to enter hen houses (possibly attracted in the first instance by mice) and eat the young chickens and eggs. Certainly these snakes will eat eggs, which are swallowed whole, there being no special mechanism for breaking the shell as in the egg-eating snake (*Datypopsis saber*). Hens' eggs are perfectly acceptable since adults are so much larger (a matter of 2 feet) than adult egg-eaters, that they can cope with them easily. I feed all my rat snakes largely on mice.

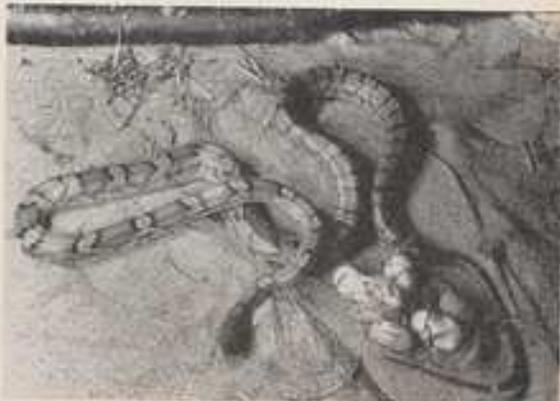
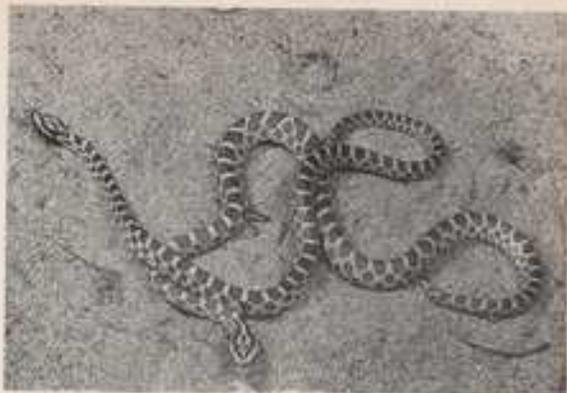
The common name "rat" snake is really a bit of a misnomer, since, as mentioned, they do in nature feed largely on mice. The speed with which they constrict and consume a mouse has to be seen to be believed. When I first obtained some of these snakes I had kept a number of box constrictors (*Crotalus constrictor*), and was accustomed to see the slow swallowing process, where one side of the jaw edged slowly forward, and took a new hold, to be followed, after a pause, by the other side. The rat snakes on the other hand swallow their prey very fast indeed, and an adult specimen will have eaten a couple of mice before a similar-sized box has swallowed one.

Incubation of Eggs

These snakes quite often lay eggs in captivity and most collectors will wish to make an attempt at hatching them. The main problem is to keep the eggs sufficiently moist, and at the same time warm (75 to 80°F). If they become too moist then they will develop fungoid growths and perish, and if too dry they will shrivel up. The eggs of all snakes are covered with parchment-like shells which absorb moisture during the incubation period. The eggs actually increase in size and weight considerably as the embryo develops, owing to water uptake. The eggs, if collected whenever they are laid, can be buried in damp sand in jars covered with glass to avoid evaporation, or buried in a manure heap in a vivarium. If the latter method is followed they must be examined at least twice a week, disturbing them as little as possible, and any that look diseased or have shrivelled up should be removed.

There are several other species which are available occasionally and which require similar treatment in the vivarium. The price of an adult specimen will be in the region of 4 or 5 pounds but youngsters, which grow quickly and are interesting to watch assuming their adult coloration, can sometimes be procured for about 30 to 40 shillings.

Top, two young specimens of the prairie blotched chicken snake (*Elophis foeta*). Centre, yellow rat or chicken snake (*Elophis sibilatrix quadrivittata*) with eggs. This species grows to about 5 feet in length. Bottom, a handsome coloured and easily kept rat snake is the red rat snake (*Elophis guttata*).



THE BRITISH AQUARISTS' FE

For Results

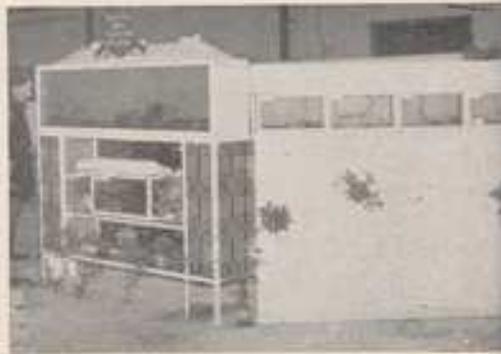


Winner of the award for the neatest and most attractive stand was City of Salford A.S., whose exhibit is pictured above



Dewsbury and District A.S. stand was placed second

Third placing was given to this display by Belle Vue (Manchester) A.S.



THE British Aquarists' Festival held at Belle Vue, Manchester, at the end of October was a great success.

Not only were there more clubs competing, 23 in all, but the number of entries had increased over last year by 250. Not only were the entries up on all the recent shows but the numbers of visitors far exceeded even the most optimistic hopes of the promoters. Both on the Saturday and Sunday the hall was filled with enthusiastic aquarists who crowded round the exhibits and traders' stands. The size of the hall had been increased to 270 feet long by 70 feet wide, and it appeared at most times more filled with people than had been the case for many years. Those pessimists who have doubted the increase of interest in fish-keeping during this year would have been greatly surprised to see this fine show and the interest taken by so many aquarists. We can be sure that at any rate in the north the interest is far greater than for some years.

The Federation of Northern Aquarium Societies can be congratulated on organising such a fine show and the many clubs participating can also be highly praised for their wonderful efforts. It was not easy for some of the clubs coming from a distance, from Sunderland for instance, to get all their stands, tanks and fishes to the show. The clubs each erected their own stand and these ranged from fairly small and neat ones to others much more ambitious; one was 40 feet long! When the first of this type of show was held there were many spectacular exhibits which appealed to the public, but the idea at this year's show was to present the exhibits not only neatly but also so that aquarists were able to inspect the fishes more easily than

STIVAL, 1960

see page 186

before. At the first few shows of this kind it was often almost impossible to view the tanks closely, but at this show every tank was in such a position that it could be examined with ease.

The usual bands of workers very efficiently carried out their difficult task, and aquarists in the south would have been amazed at the type and attractiveness of the results of their efforts. Of the many neat stands, that of Salfoed A.S. was considered the neatest, but they were closely run by several of the others. Dewsbury A.S. was one club which narrowly missed the first prize by having an empty tank in their exhibit; just carelessness, I suppose, for it could have been filled with water and had a couple of plants in it to have made all the difference.

The style of show where each club is responsible for the erection of its stand is a very good idea, except for the convenience of the judges. I have had to judge many shows all over the country for a number of years but the Manchester show is by far the most difficult and tiring to judge. I had six classes to judge and when one thinks that the fishes competing in one class may be found on any of the 23 stands it can be realised that to walk about finding them and then making comparisons was no easy task, and, as one judge put it, one needed skates to get around.

It was heartening to see that the coldwater fishes were



The numerous trophies awarded at this year's B.A.F. were displayed as a background to the stand of *The Aquarist*

more numerous and of better quality. A few years ago there were only a couple of coldwater fishes on show but at this show there were very many, most of them exhibited by the Northern Goldfish Society. The quality of all the winners was very high and shows much improvement.

To sum up, the whole show, with a Sunday afternoon lecture by Dr. Gwynne Vevers, proved to be an enormous success and before it was over many were talking about the one to be held next year. It was not surprising that the show attracted visitors from Northern Ireland, Scotland, the south of England and even Holland. On Sunday a coach load of members of the Hendon Aquatic Society arrived to give an evening lecture with colour slides.

A. BOARDER



A comprehensive display of guppies in table-show jars formed the exhibit of the Fancy Guppy Association



Assistant show secretary Mrs. P. D. Hammond (standing) with secretary of the F.N.A.S. Mr. T. R. Lee (standing) and Mr. C. Graham (treasurer of the F.N.A.S. and B.A.F. judge) photographed at the F.N.A.S. stand

THE ANGEL FISH

by R. E. MACDONALD



ANGEL fish are the most popular of all tropical fishes, even perhaps to the uninitiated. When reference is made diagrammatically or otherwise to the various species of tropical fishes, the familiar black-barred, disc-like creatures with the filamentous pelvic fins are always produced as an example.

Angel fish belong to the genus *Pterophyllum*; they are members of the Cichlidae family and their natural habitat range includes the Amazon Basin. There are three species: (1) *Pterophyllum escheri*; (2) *P. scalare*; (3) *P. alatum*. Species (1) and (2) are so similar in their colour patterns that the only way to distinguish between them necessitates taking a scale count; this particular method of identification of a species is regarded as infallible. The method practised when taking a scale count was explained in my article "Breeding the Bumble-Bee Fish" (published in *The Aquarist*, May, 1960). On examination, *P. escheri* is found to possess from 28 to 36 scale rows and *P. scalare* from 38 to 40 scale rows. *P. alatum*, which incidentally, is consistently regarded as being a most unpoplar aquarium fish, possesses from 41 to 47 scale rows.

The temperament of this genus is not so different from

Photo: Edwin Lowry and Co.

Pair of angel fish tending eggs laid on a broad leaf of *Sagittaria*

THE BRITISH AQUARISTS' FESTIVAL 1960 RESULTS

See page 184 for report

Results: Best fish in show: L. Baxter (Northern Goldfish) 80 points. Best other than best fish in show—tropical cichlids: L. Lewis (Barnley) 86 points. Tropical livebearers: H. Bloom (Salford) 84 points; goldfish: G. London (Admon-under-Lyne) 82 points. Best society furnished aquarium: 1, Salford 77 points; 2, Morley-side 77 points; 3, Blackpool 72 points. Coldwater: 1, Rochdale 73 points; 2, Northern Goldfish 70 points; 3, North Warwickshire 65 points. Best individual furnished aquaria (tropical): 1, Bradford 80 points; 2, Bradford 72 points; 3, Mansfield 66 points. Best individual coldwater aquaria: 1, Admon-under-Lyne 73 points; 2, Northern Goldfish 71 points; 3, Orms 66 points. Best terrarium: 1, Orms 72 points; 2, Sheffield 71 points; 3, Barnley 69 points. Guppies: 1, R. Walker (Sunderland) 78 points; 2, J. Keeble (Oldham);

71 points; 3, B. Morris (Sheffield) 73 points. Livebearers: H. Bloom (Salford) 84 points; 2, R. Sanders (Mansfield) 84 points; 3, N. W. Buckley (Middleton) 83 points. Common goldfish and crosses: 1, L. Baxter (Northern Goldfish) 80 points; 2, J. Scott (Northern Goldfish) 79 points; 3, J. G. Eason (Northern Goldfish) 75 points. Shoebunkas (British and London): 1, R. Howarth (Northern Goldfish) 82 points; 2, J. G. Eason (Northern Goldfish) 80 points; 3, C. Bennett (Northern Goldfish) 78 points. Fantails: 1, G. London (Admon-under-Lyne) 82 points; 2, L. W. Mole (North Warwickshire) 78 points; 3, N. Chalfoun (Northern Goldfish) 75 points. Vultures: 1, A. E. Branton (Sunderland) 74 points; 2, A. E. Branton (Sunderland) 73 points; 3, R. Howarth (Northern Goldfish) 72 points. A.G.V. fancy goldfish: 1, M. J. Bennett (Northern Goldfish) 78 points; 2, R. Baxter (Northern Goldfish) 75 points; 3, R. Baxter (Northern Goldfish) 73 points. Coldwater fish (any species): 1, H. Pughall (Orms) 82 points; 2, G. W. Harper (Belle Vue) 79 points; 3, M. Chorlton (Northrop Goldfish) 78 points. Angels: 1, R. Rhodes (Admon-under-Lyne) 79 points; 2, J. Ashworth (Oldham) 77 points; 3, J. Fynes (Admon-under-Lyne) 76 points. Dwarf cichlids: 1, A. Whitfield (Bradford) 80 points; 2, B. Dome (Blackpool) 77 points; 3, B. Hutchinson (Mansfield) 76 points. Catfish A.G.V.: 1, —, Gould (Hagton Dobry) 84 points; 2, L. W. Walker (Mansfield) 81 points; 3, H. S. Lee (Mansfield) 77 points. Fighters: 1, C. H. Wilson (Bradford) 84 points; 2, R. Walsh (Barnley) 83 points; 3, Mrs. D. Loder (Barnley) 80 points. Labyrinth: 1 and 2, C. R. Wilson (Bradford) 80 points and 78 points; 3, L. Coast (Mansfield) 78 points. Barbs: 1, H. Wainwright (Middleton) 85 points; 2, R.

Dome (Blackpool) 85 points; 3, L. Stone (Farnley) 84 points. Characins: 1, B. Cheshire (Belle Vue) 83 points; 2, J. Hodgins (Barnley) 82 points; 3, E. Davies (Middleton) 80 points. Carps and minnows: 1, Mrs. L. Wainwright (Middleton) 84 points; 2, J. Pennon (Barnley) 78 points; 3, C. Walker (Milton) 75 points. Catfish: 1, T. Minshall (Mansfield) 83 points; 2, G. Holmes (Bradford) 82 points; 3, J. Ashworth (Oldham) 81 points. Egg-laying tooth carps: 1, Mrs. L. Wainwright (Middleton) 83 points; 2, C. R. Wilson (Bradford) 79 points; 3, B. Duxford (Dewsbury) 78 points. A.G.V.: 1, L. Lewis (Barnley) 86 points; 2, J. Hodgins (Barnley) 80 points; 3, B. Cheshire (Belle Vue) 79 points. Breeders (egg-layers): 1, R. J. Williams (Salford) 84 points; 2, R. Dome (Blackpool) 80 points; 3, P. Bolton (Mansfield) 82 points. Breeders (freebearers): 1, R. Rhodes (Admon-under-Lyne) 82 points; 2, Mr. Purley (Leeds) 87 points; 3, B. Ruben (Salford) 83 points. Breeders (coldwater): 1, H. Pughall (Orms) 78 points; 2, R. L. Howarth (Northern Goldfish) 78 points; 3, A. E. Branton (Sunderland) 78 points. Plants: 1, G. Griffiths (North Warwickshire) 87 points; 2, R. Wimmerburn (Bradford) 85 points; 3, G. W. Cooke (Dewsbury) 84 points.

The "Roses Shield" presented for inter-society competition between Lancashire and Yorkshire clubs was won by Lancashire and the special prize for the society whose members won the greatest number of awards went to the Northern Goldfish and Pondkeepers Society with 25, Bradford being second with 22 awards and Admon-under-Lyne and Barnley being third place with 13 awards. Special prize for the most attractive stand was won by Salford A.S.

that of any other genus of the family Cichlidae, for they can be just as predacious and abusive, particularly at spawning time, as any of their cousins. Small fishes quickly develop chewed-up fins when in the company of angel fish if they can stay around long enough and do not get chewed-up to the point of digestion on introduction to the tank. For, apart from fin-nipping habits, angel fish can become quite adept and seditious in the art of fish-swallowing. From this it can be seen that angel fish are most certainly cannibalistic by nature. Like all bullies, however, these fish are easily frightened by shadows and quickly lose their colour when this occurs, so the tank should be well planted with such vegetation as Amazon sword plant (*Echinodorus brevipedunculatus*), the beautiful Madagascar lace plant (*Aponogeton fenestratus*) and giant sagittaria (*Sagittaria sagittifolia*).

Much attention should be paid to the question of vegetation, particularly if the tank is situated in a busy location. Angel fish are the only members of the Cichlidae family, apart from the dwarf cichlids, that will tolerate plant life in the aquarium.

Because angel fish are temperamental, it follows that temperament will play an important part in the pairing and breeding of these fish. For breeding purposes, "group pairing" is achieved by massing together as many angel fish as the tank and pocket will allow in one aquarium before the fish reach breeding size, i.e. approximately 3 inches. It will be noticed that as the fish settle down, pairs will separate themselves from the rest of the community and appear constantly to fight each other. Despite this strange way of showing affection, there can be every hope that the two fish observed acting in this manner will prove to make a satisfactory breeding pair.

Once paired, the angel fish will not allow any interloper to interfere in their sordid family squabbles and any intruder is instantly dispatched with fins bearing queer semicircular motifs due to the quick mouth-work of the outraged couple.

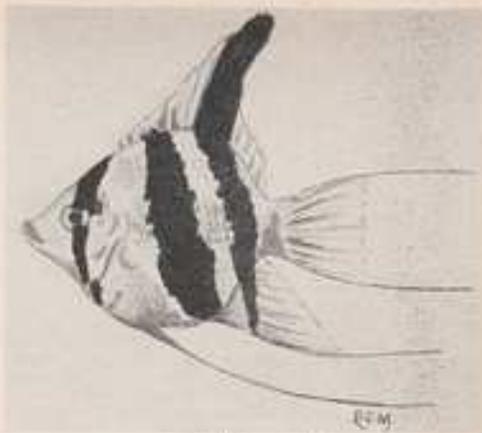
Generally speaking, angel fish make good parents and should be allowed to tend their young, but like so many other cichlids, young parents are not always good parents and therefore require careful watching. There is always the chance that an argument could start over a baby that has just happened to slip down somebody's pharyngeal cavity, with the result that very soon all the fry start slipping down pharyngeal cavities!

Eggs can also become quickly associated with parent's digestive organs if Mum and Dad are badly frightened in any way after spawning, so it becomes essential to take precautions against noisy neighbours, as obviously all angel fish hold the opinion that the safest place for their fry at moments of danger is in the parent's stomach.

Breeding the angel fish is a task for the experienced aquarist and requires a good amount of "know-how," but briefly, for those interested, the standard procedure is as follows.

Each set of paired fish are placed in their own 15 gallon tank containing clean, slightly acid water (between pH 6.6 and 7.0), with the breeding temperature of 80° F. The spawning medium on which the fish lay their eggs can be either broad-leaved vegetation such as the Amazon sword plant or a piece of slate tilted on its side in the aquarium. Angel fish have been known to deposit their sticky eggs on glass tubes struck upright in the sand.

The pair are then well conditioned by feeding with *Tubifex*, *Daphnia*, white worms and small fishes, e.g. newly hatched guppies, remembering, of course, that angel fish are carnivorous. Within a few weeks the fish will begin to



Pterophyllum nimeke

clean the surface of the selected spawning site thoroughly and afterwards to deposit their spawn.

Once the eggs are laid the parents will begin to fan them with their pectoral fins. This action serves two purposes. (1) It washes away any natural sediment that may be deposited on the eggs, which could cause a bacterial infection, and it also washes away any fungus spores that could destroy the eggs. From experience I have found that it causes no harm to assist the parents in this fight by adding 2 drops of a 5 per cent. solution of methylene blue to the water in the breeding tank. (2) It ensures a constant supply of freshly oxygenated water to the developing embryos. This fanning action can be artificially reproduced by allowing a stream of bubbles from an aerator to pass over the eggs.

Once hatched, the fry can be fed on Infusoria such as rotifers and later with sifted *Daphnia*. If well looked after, angel fish can grow to some 5 or 6 inches in size.

One important factor that should not be overlooked is that concerning light. Angel fish need at least 12 hours of light per day, artificial or natural, and, if possible, the tank should be allowed a small fraction of direct sunlight. It is thought that the light cycle received by the fish affects the spawning cycle. This point is important as it is only by supplying the right kind of care and environment that specimens of the genus *Pterophyllum* can eventually be induced to reproduce.

Cacti in the Fish house

THE Christmas cactus, *Zygodactylon truncatum*, should flower later this month. This plant is sometimes called the lobster plant as the flattened stems resemble the claws of a lobster. The cerise-red flowers are borne on the ends of the stems and when the buds are forming great care should be taken to ensure that no draughts reach the plant or the buds may fall. The same thing may happen if the plant is moved from one room to another, if too dry or too wet. A little liquid fertiliser may be given once a fortnight when the buds are half formed.

The Guppy-King of Tropical Fishes

by PETER DENDY

MUCH has been written about feeding fish generally and I do not propose to enlarge on this subject. However, I must make one or two points. Live food is the most important part of the diet for guppies and I would say a must: screened *Daphnia*, brine shrimp, Grindal worm or chopped white worm; one of these foods should be offered every day in moderation. The guppy is a hog for food and can so easily be overfed, with consequent indigestion or constipation, to both of which guppies become easy prey.

Food size is important and everything that is offered should be capable of being forced through the average tea strainer of fairly coarse mesh. "Feed a little and often" is very true for guppies, and mine are fed four or five times a day. I make a policy of feeding youngsters as much as they will eat until they are 6 weeks old, and then I reduce the quantity considerably. Overfeeding can cause you more troubles with adult fish than almost anything else, and if your guppies do not rush to the front of the tank whenever they see you, then you are certainly overfeeding them.

Watch your fish for outline, and if the males have bulging tummies and the virgin females look almost gravid then you are overfeeding and you must cut it down. Overfed females will often droop their dorsals, and a spot of fasting for a day will work wonders with their general liveliness and deportment. Vary the diet, too, as much as possible and do not rely on only one brand of dried food, no matter how well advertised and expensive it is.

It is possible to enhance the colours of the males by special feeding, though a really fit and healthy male needs no help to make him sparkle. However, I will give some details of colour-intensifying foods. The coloration on a fish comes from pigment cells: melanophores giving black, brown or yellow depending on the concentration, erythrophores giving reds and chromatophores giving yellow. There is also a waste material, guanine, present in crystal form which may be mixed with the colour cells or lie freely in the skin, producing a silver coloration. Thus blues and greens are the effect given by colour cells intermingled with guanine.

The fish's colour intensity is due to expansion or contraction of the colour cells, which is controlled by two chemicals in the blood (hormones), which have an effect on the pigment distribution. Colour pigments are derived from eating vegetation; suitable vegetable extracts may thus be fed to guppies to increase their colour.

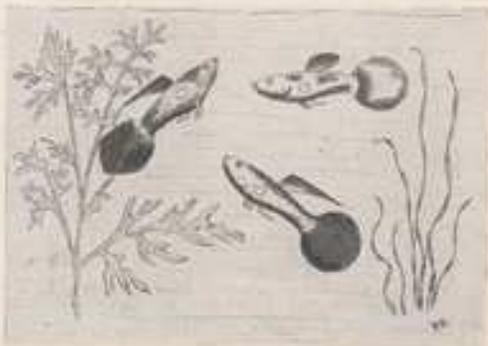
Carotene obtained from young carrots will improve the reds, yellows and oranges, and old potatoes will improve the blacks and browns. Young deep-red carrots or old potatoes should be grated over a dish and then the juice squeezed out in a muslin bag. This juice can be mixed with Bemax or other dried food and spread on a plate for sun- or oven-drying. The mixture should be dried quickly, but not made too hot in an oven, or the essential part will be destroyed. When quite dry the mixture may be ground to a suitable size and fed alone or mixed with other foods. The colour intensification is a slow process, though a lasting one.



Long-tailed guppies: double-tailed (left) and scortail guppies



Left, pinetail guppy; right, spoorail guppy



Short-tailed guppies: cofertail (left), roundtail (top right) and Robson guppy

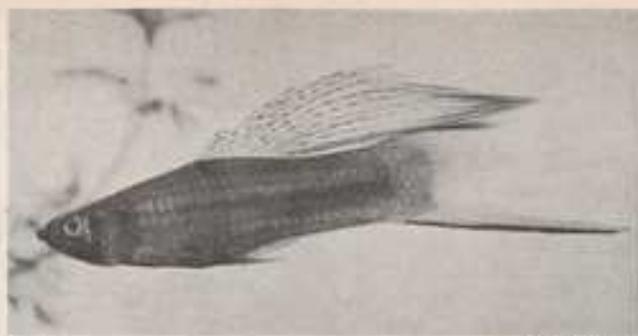


Photo:

Male Simpson swordtail

Gene Wolfsheimer

THE SIMPSON SWORDTAIL

by GENE WOLFSHEIMER

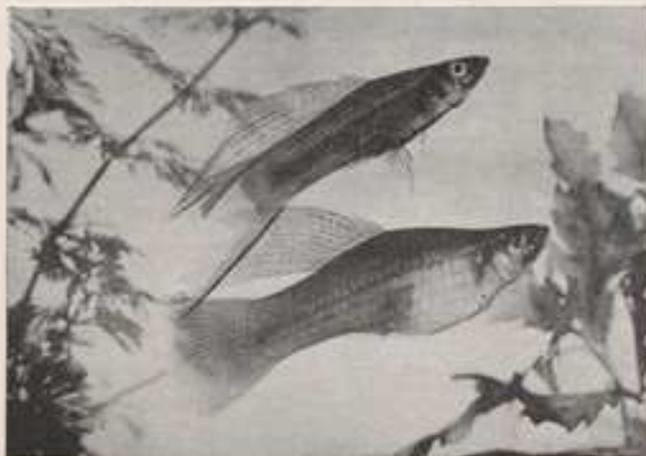
THE latest new livebearer variety in the local area of Los Angeles, California, is the sensational Simpson Swordtail and for once, in my opinion, the adjective certainly fits the subject.

Mr. and Mrs. Thomas Simpson of Gardena, California, happened to see the first little high-finned swordtail, *Xiphophorus helleri*, swimming about with its normal brothers and sisters. It was saved because it was "so cute." This fish turned out to be a male. The original

parents are somewhat obscure but one was a brick-red male and the other a "blue" swordtail. Naturally, the Simpsons found their single specimen with his long flowing dorsal fin much more "cute" as it grew up. It became most beautiful and high hopes were maintained that its future offspring might resemble it. As mates he was given a number of velvet-red swordtail females.

To-day, thousands of these Simpson swordtails are being produced in an attempt to fill the overflowing orders coming in for them. From experiences with my own breeding stock it has been found that these high-finned red swords are still not breeding true colours as yet. One spawning can include various shades of red as well as golden and some green. Constant breeding back to velvet-red swords will in time bring about a true strain of this long-finned red swordtail.

Even though various colours and shades still exist from one spawning, the majority of the young definitely are of the high-finned stock. In fact, the long fin is noticeable even on very young specimens. The dorsal fin on the females as well as the males begins to lengthen when the fish are still small, long before the sex is apparent. Although this variety of swordtail reaches a length of 4 to 5 inches, small ones with full growth of both swordtail and high dorsal fin can be grown through control of food and swimming space. These smaller specimens are ideal for the smaller aquarium. (Reprinted from *The Aquarium Journal*, U.S.A.)



Pair of the new Simpson swordtails (male, top fish)

our readers

Readers are invited to express their views and opinions on subjects of interest to aquarists. The Editor reserves the right to shorten letters when considered necessary and is not responsible for the opinions expressed by correspondents.



write

Address letters to The Editor, *The Aquarist*,
The Butts, Half Acre, Brentford, Middlesex

Reproduction in Water Fleas

MR. C. E. COLE'S letter (*The Aquarist*, September) calls for reply on three points.

1. My original letter was prompted by the feeling that in putting forward his own observations Mr. Cole was sweeping aside somewhat contemptuously other views on this controversial topic. My aim was to put on record results and conclusions of other workers who have by observation and experiment come to conclusions different from those of Mr. Cole. I did not intend to belittle the meritorious efforts of Mr. Cole. In this connection, my use of the word "quote" was unfortunate, and if I appeared rude, it was unintentional and I apologise. I still maintain that the large amount of work which indicates a correlation between ephippial production and food supply is not something which can be lightly discounted. I agree with Mr. Cole that his observations are not to be explained in terms of food supply, but nevertheless what is needed is a more general picture which will embrace and adequately explain both Mr. Cole's observations and those of others, not the discarding of the general consensus of opinion because a new set of facts are not in agreement. I would ask Mr. Cole why it is that, if development of ephippia is merely a stage in the life history, taking place because the *Daphnia* have reached the age or size at which ephippia are produced, ephippia are not produced all the year round? If they are found only at one season, surely some environmental influence is at work.

2. There are exceptions to the general rule that viable young are produced from ephippial eggs only when these are fertilised. Olofsson, O. (1918) and Edmondson, W. T. (1955) have made observations on *Daphnia* populations in which no males have been found. These populations died out in winter and were entirely dependent on production of resting eggs for their continued existence. It could be argued, I suppose, that though not found, males may yet have been present though extremely scarce. There is, however, laboratory evidence also. Papers published in 1926 by Banta and by Schrader showed definitely that a clone of *Daphnia pulex* was able to produce viable ephippial eggs without fertilisation. Males were never produced.

3. I wish that Mr. Cole would distinguish clearly between fact and fancy and between objective and subjective judgements. It is fantasy to imagine a female *Daphnia* which is "ephippial-minded" or a male *Daphnia* as "amorous" or capable of "taking a hint"; and placing these expressions in inverted commas does not to my mind make them any less fanciful but only suggests that the writer does not mean quite what he says. I do not object to

Mr. Cole holding these opinions. I do feel it is wrong though to present them as if they were statements of fact.

To take but one example: "But the females shake them (males) off, unless they are 'ephippial-minded'." The first half is a statement of observed fact, the second is a subjective opinion, unverifiable and almost certainly imaginary. Other examples occur in the last paragraphs of Mr. Cole's letter. Is it really true that there is no way of proving that a female ready to lay eggs is less vigorous than a parthenogenetic female? Berg's depression hypothesis lends some substance to this idea (for a review see Berg, 1934) and I would have thought that rate of heart beat or antennal swimming movements could be measured and used as an indication of activity.

W. J. P. SMYLY,

Ambleside.

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Berg, K. (1934). Cyclic reproduction, sex determination and depression in the *Cladocera*. *Biol. Rev.* 9, 174-174.
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Olofsson, O. (1918). Studien über die *Reproduction-formen* *Spirintherops*. *Zool. Bild. von Uppsala.* 6, 163-644.
Schrader, F. (1926). The cytology of parthenogenetic eggs in a species of *Daphnia*. *Zool. Induct. Abstamm.-und Vererb.* 40, 1-27.

Keeping to the Point

I AM surprised that Dr. R. Affleck should imagine that I have any desire to "have a go at him" as he puts it (*The Aquarist*, October). Surely "the boot is on the other foot." I also regret that he should find it necessary to accuse me of evasion, and to imply that I am a liar.

However, let us take his points one by one and see what they are worth. In his first paragraph he says that my reference to his use of the erroneous term "non-scaled," had nothing to do with the point in question. Now, what was the point? He suggests that it had only to do with the use of G.S.G.B. terms, but in his final remarks on this subject he stated that these references were "inaccurate and misleading." Now, I put it to you: non-scaled ventrals; inaccurate and misleading, or not?

He next suggests that I am a stranger to the truth, since he can find no one in the G.S.G.B. who remembers my remarks on the three groups. To this I must ask, is Mr. Pearce of, I believe, Farnborough, still a member? He and I were in complete agreement on this point. There is also an article which I wrote in *The Aquarist* (April, 1958) entitled "Goldfish Fallacies," where I stated my views on

this matter in no uncertain terms.

Now as regards his statement that I have hinted of knowing more about the inheritance of reflecting tissue than the rest; this simply will not bear investigation. Because a man states that he is aware that certain views do not fit observable facts, that neither implies nor suggests that he personally does know what views will fit these facts. He merely states that in his opinion, the accepted views do not.

Finally, there is the kidney problem, which I am supposed to have evaded. If Dr. Atteck will deny categorically that the kidneys of fish have anything to do with the iridescent factors, then I will gladly give a full account of why I think they do, although I still think my previous statement sufficient.

A last word as regards evasion. Since in this last letter Dr. Atteck makes no reference to the ability of aquatic plants to release oxygen into the water under the influence of photosynthesis, are we to assume that he not only enjoys reading Mr. C. D. Scudgorpe's letters, but is also in complete agreement with that gentleman's statement (made on two occasions) that "gases produced within the plant are most definitely not passed out into the water."

For those newcomers to fish-keeping who really want to know the answer to this I suggest the following. Procure a large glass test tube, fill it with water, and place it over a piece of hornwort (*Geratophyllum densum*) so that the plant is completely encased by the tube, the whole contraption being housed in a container sufficiently large to support a small fish. If this is exposed to full sunlight during the summer months it will be found after a few weeks that the tube is half full of oxygen and therefore afloat. That the gas is definitely oxygen may be proved by placing one's thumb over the lower end of the tube, inverting it, and applying a glowing splint, which will be seen to burst into flame.

N. E. PROKHA,
Beckenham, Kent.

Breeding of Siamese Fighters

A FEW days ago I was fortunate enough to see a pair of *Betta splendens* spawning in the 5-gallon tank I had prepared for them. I have been a keen aquarist for over 10 years and have spawned fighters before, but this was the first time I had seen the actual spawning taking place—and I got a shock! I know that authors of various books on tropicals may disagree about a lot of things, as your article "Vallisneria is a Mist" so aptly showed, but they all seem to agree that after an embrace the male recovers first, swims down after the eggs and deposits them in his bubble-nest.

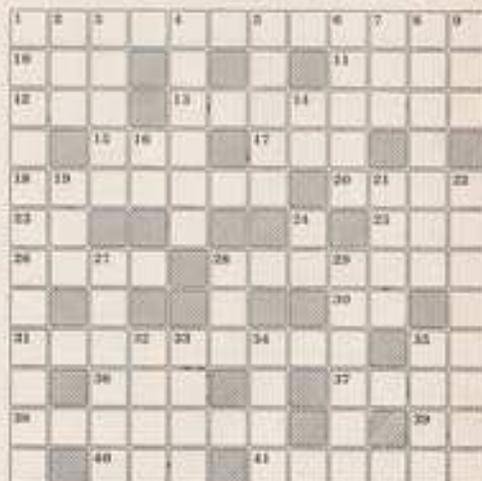
During the spawning I witnessed, however, the male did not deposit so much as a single egg in his nest. Certainly he recovered first, almost immediately, but he remained just below the nest. Meanwhile the female sank down after the eggs and frequently did not recover until reaching the bottom of the tank (depth 9 in.). There she picked up the eggs and as she swam upwards she released the eggs, which floated in their bubbles, up to the nest. The bubbles did not rise singly—as they floated up they were all stuck together like a miniature bunch of balloons. The female never swam right to the surface to deposit the eggs in the nest. They were always released midway. Everything else was perfectly normal (as in the books). The female took no part in nest-building and was driven away when spawning was completed. The male guarded the eggs, which proved to be fertile, quite faithfully.

I wonder if I have an unusual pair, or if many authors accept facts, as I did, without testing them?

W. A. CLEWS,
Chorley, Lancs.

The AQUARIST Crossword

Compiled by J. LAUGHLAND



CLUES ACROSS

- Popular name for a water beetle (3, 7)
- Night of 1 Across (3)
- A mare net holds the girl (4)
- Bring forth young (3)
- Variety of 6 Down (8)
- Last of the French (3)
- Admission of date among dogs is curious (1, 1, 1)
- Sea urchin (7)
- More than the gas of a sea horse, but less than 6 Down (4)
- "Best car in the world" (1, 1)
- One in Scotland (3)
- A piece of wood fixed alongside another as a strengthening (6)
- Wheat animalcule (7)
- A little angel? (2)
- I lost snow (anagram) (9)
- Father of terrapins (2)
- Atmosphere of the fairy string (3)
- A dive (1, 3)
- In England, barren, in Scotland blenny (3-6)
- Mixed type of yaks (2)
- Abbreviation of regal (3)
- Serrated (6)

CLUES DOWN

- Problems (6, 6)
- A Vallisneria contains this intoxicating drink (7)
- The doctor fish (5)
- Rebellion or anglers' joy (8)
- A pond in the desert (5)
- Confused name (3)
- Call of the catfish? No, a girl (3)
- Acacia (7)
- Ten cents for the fisher (3)
- Perennial cod (2)
- King Emperor (1, 1)
- As 15 Across (3)
- Flourish platform (8)
- Water narcosis (8)
- You've got it! (2)
- Schools of fishes (6)
- Decey. It can affect a fish's fins (3)
- Opposite of pond? (8)
- Ready (8)
- This may start a drip (4)
- Their eggs were once sold for fish food (8)
- 6th, hit to sea horse (4)

(Solution on page 193)



from AQUARISTS' SOCIETIES

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

THE Best Fish of the Year Show at the last meeting of the **Boundon and District A.S.** was won by Mr. Pratt with a kissing gourami. Second and third places went to Mr. Woodcock with a kribia and 3-spot gourami. Other results were: 1. Darters' Class—1, Mr. Laif (Gourami); 2 and 3, Mr. Woodcock (kribia and thick lip gourami). Any other classes—1, Mr. Pratt (black box snail); 2, Mr. Woodcock (African catfish); 3, Mr. Woodcock and Mr. Bush (Guppies and ramzumi) tie. Goldwater Class—1, 2 and 3, Mr. Laif (two black moons and a common goldfish).

A party of members were by coach to a tropical fish breeding establishment at Colchester and spent an enjoyable day.

The society meets at 20, Heath Road, Boundon.

THE annual convention of the Hendon and District A.S. was held recently, and was an unqualified success the attendance being even greater than in previous years. Clubs traveled from as far as Stroud and Northampton, and well-known individual hobbyists from Sheffield and Birmingham as well as the London area came to see a first class programme of colour slides provided by Lloyd and Mary Bell, hon. members of the society now residing in California. The subject matter covered the home shoeing industry in California, Standard Aquarist Nat. Francisco, and two collecting trips to Mexico and Colombia. The programme was presented by the chairman of Hendon, Bill Calow, in his usual masterly style.

The date arranged for this Convention unfortunately clashed with the B.A.F. at Bally Vee, Manchester, and some of the regular attendees at the Hendon Convention found themselves in a quandary. Hence, nothing done, promptly arranged to visit Bally Vee with their programmes the following day (Sunday), and a party of 25 duly left London by coach at 7.30 a.m. and had an excellent day with the northern aquarists, seeing some greatly impressed by the obvious evidence that our hobby is strong and thriving in the north.

AT the Scottish Aquarist Society show Greenock and District A.S. were awarded first for Goldwater and second in the Tropical, and also won the Intra-Club Trophy. In comparison with previous shows there were fewer entries but the standard and quality was very good. The club has also held an open table show which was very attractive and there were about 20 small tanks in use. It is hoped that next year the club will manage to hold more such shows.

THE annual convention of the Goldfish Society of Great Britain was held at Christington Zoo. There was an interesting talk and demonstration on ecology by R. E. Jess, B.Sc., and this was preceded by a colour film from the Upchurch studios showing duplicate collecting, goldfish spawning, including band spawning, and shows of the eggs, adivas and then the young fish. The annual championship competition brought an entry of 70 fish of six varieties. The presentation of the cups was followed by an auction of high-class surplus fish from good strains. The quarterly meeting

was held on 12th November and the championship classes for years of fish bred in 1958 and in 1960 were well supported and showed the quality of fish raised by members is still improving.

The next quarterly meeting will be held on Saturday afternoon, 16th January, at Kingsway Hall, Helston, W.C. Qualified enthusiasts are welcome to attend.

THE second meeting of the season of the Dundee A.S. was attended by 74 members. The table show announced was Scott Trophy—Guppies, and the results were as follows: 1, Alex. Robertson (Veldhuis); 2, W. S. Russell (Dunblair Stewart); 3 and 4, Alex. Robertson (Veldhuis). This makes the previous placings in the Scott Trophy competition: A. Robertson, 8 pts.; G. B. Kirkland, 3 pts.; W. S. Russell, 3 pts. Judging was carried out by Wm. Cockburn and a talk by Alex. Robertson entitled "Fancy Guppies" followed and concluded some of the show standards for varieties of guppies. The talk was illustrated by cut-out models and drawings.

AT the Scottish A.S. Open Show there were 11 entries from the club and the following seven awards were gained: Guppies—1, A. Cross (G. Lewis), Goldwater—1 and 2, W. S. Russell (Dunblair Stewart), Guppies—1 and 2, A. Robertson (Veldhuis), Breeders' Livebearers—2, A. Robertson (Dunblair Stewart), Breeders' Egg-layers—2, P. N. Gorman (Orange Chromides). The Balmora Shield for Best Fish in Show was also gained by A. Robertson for his pair of Veldhuis Guppies. The society extends its congratulations to these members.

THE final heat of the Intra-Club Table Show Competition, organized by the **Bristol Tropical Fish Club** between the Bristol, Bath and Keynsham Clubs was held recently, and the ultimate result was: Bristol Tropical Fish Club, with 691 pts.; 2, Bristol A.S., with 431 pts.; 3, Keynsham A.S., with 24 pts.; and 4, Bath A.S., with 25 pts. The Bristol Tropical Club will now hold the cup, to be presented to the winners at their meeting in December, for the next 12 months. The Bristol A.S. scored for the highest number of points gained by an individual member during the whole of the competition was won by Mr. H. Brown of the Bristol A.S. with a total of 241 pts. During the course of the contest, which covered four heats and included 16 species of fish, 365 entries were submitted and the standard was extremely high. Judging throughout the competition was carried out by the Bristol Tropical Study Group.

At the October meeting of the Club, Mr. V. Jones, of the Bristol Zoological Society, gave a very interesting talk on Marine Aquaria which was greatly enjoyed by a good attendance of members. New members are welcome, and persons interested are asked to communicate with the hon. secretary, Mr. L. Littleton, 9, Little Stoke Road, Snake Bishop, Bristol, 9.

THE Gairford A.S. commenced its 1960-61 season with an Annual General Meeting at which the following officers were elected for the present year: Chairman, W. Ryan;

hon. secretary, S. Cornock; general secretary, P. Emsay; treasurer, F. McManis; publicity officer, M. D. Owen; librarian, D. Monk.

Nine new members have been gained during the past few weeks. The club is now numerically strong, and also strong in good quality fish and forthcoming shows are looked forward to with anticipation. New members are always very welcome Monday evenings at 8 p.m. at Holbeach Road School, Gairford, close to Gairford and Gairford Bridge Stations.

THERE has been plenty of activity in the Reading and District A.S. recently. The table show for the Lovelace Cup was won by Mr. D. Anderson and a miniature tank competition was won by Mr. E. Potts, the second being Mr. S. Humphries with Mr. E. Partridge third. A grand social evening was held at "The Black Box" and four other clubs of the Three Counties Group, Banbury, High Wycombe, Oxford and Slough, attended as the guests of the Reading club. Two competitions were held, both being won by Banbury. At the club meeting, a few weeks later, there was a lively discussion on the last Three Counties show held at Reading. The table show for the Barbs Cup was won by Mr. D. Anderson, second and third places going to Mr. C. Maynard. Several members went to the Hamble Convention and had a very enjoyable time seeing some magnificent slides of the South-East Aquarists. The secretary is Mr. G. Thompson, 57, Royal Avenue, Colton, Reading, and new members will be welcome.

THE Middlebrough and District A.S. are holding a show on 6th, 7th and 8th April, 1961, in All Saints' Hall, Grange Road, Middlebrough. This will be an Open Show with classes for furnished aquaria and individual species, etc., and an invitation is extended to all aquarists who are able to exhibit or attend. Schedules will be available later.

THE tragic death, in a road accident, of Mr. Eric Kitching, chairman of the Slough A.S. is announced with regret. His loss will be felt in southern fish-keeping circles, as he was a keen and active aquarist. He had been chairman for the past 4 years and it was through his untiring efforts that the annual shows in Slough had been run in 1959 and 1960. Eric was a great and loyal friend to many aquarists, especially in the South-West Midlands Aquarist Association and the Three Counties' Federation. His very pleasant and easy manner endeared him to all with whom he came in contact. His good sense and clear thinking were respected by all.

AT Anne's Society of Aquarists meet on the first Thursday of every month at 8 p.m. in the Civil Service Club, Dosewall Pass, Baffin, 7. Visitors will be made welcome, and further information can be obtained from Mr. J. C. Cummings, 43, Elms Street, Stansfield Road, Baffin, 9.

RECENT meetings of the Sheffield and District A.S. have resulted in discussion on breeding fish losses, and the finer points of judging, given by Mr. E. Chapman, the resident judge and very well known in all aquarist circles and electrical problems to the hobby. A very fine talk was well received when Mr. P. Duggan of Waverley gave "The Evolution of Fishes," accompanied by diagrams and colored illustrations. Mr. K. Colton, president of the society, gave a very interesting lecture on "The Panchax Group."

The secretary, Mrs. M. Knevels, 171, Woodmont Road, Sheffield, 8, would like to hear from other societies to exchange news and views on the hobby.

MESSRS. Allan, Barnett, Shield and Mr. and Mrs. Voper of the Breckley and District Breeders Circle, are collaborating in an investigation into the paradise fish (*Macropodus opercularis*), in which details relating to spawn-

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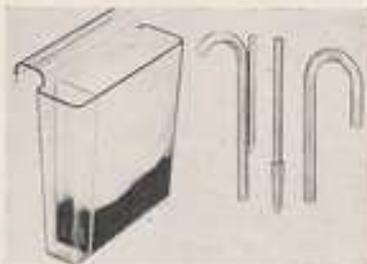
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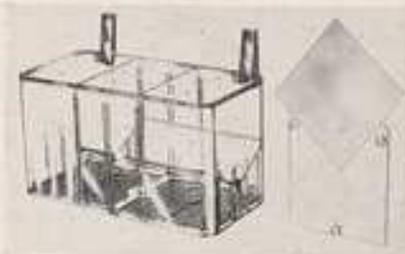
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Holly Bank Nurseries, Grove Lane, Hale
Telephone: Ringway 3301
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Metcalf, G. R.
2, High Northgate
(On main A.1 road) Darlington
Telephone: Darlington 5991
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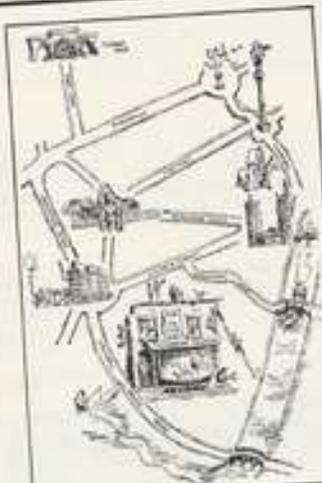
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