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ANGLE IRON

18\(\times\) 10\(\times\) 10\(\times\) 10\(\times\) 10\(\times\) 10\(\times\) 10\(\times\) 10
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24\(\times\) 12\(\times\) 12\(\times\) 12\(\times\) 12\(\times\) 12\(\times\) 12\(\times\) 12\(\times\) 12

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18\(\times\) 10\(\times\) 10... 9\(\times\) 10\(\times\) 10
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<td>16/-</td>
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<td>16 x 8 x 8</td>
<td>21/6</td>
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<td>18 x 10 x 12</td>
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<td>18 x 10 x 10</td>
<td>27/6</td>
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<td>Angel</td>
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<tr>
<td>White Cloud</td>
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<td>Flames</td>
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<td>Bebros</td>
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<tr>
<td>Black Widows</td>
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<tr>
<td>Playa variegata</td>
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<td>Swordtail</td>
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<td>Scarbor</td>
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<td>Scalas</td>
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<td>Guppies (abl)</td>
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<tr>
<td>Harlequin</td>
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<tr>
<td>Cherry barb</td>
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<tr>
<td>Nicker barb</td>
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December, 1964  vii
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THE AQUARIIST
London Show Meeting

There is an obvious demand for a large-scale aquarium show in the London area, there should be sufficient support for such a venture if all aquarists' societies participate, and further investigation is needed to establish the best way in which the show could be organised on a sound financial basis. These were the main points to emerge at the meeting called by Hendon and District Aquatic Society early in December, which was attended by about 50 people, including prominent personalities in the aquarium trade and representatives from aquarists' societies (Carford, East London, Ethel, Freecycle, Goldfish S.G.B., Hendon, Hampstead, Hounslow, Riverside, Usbridge, Willeston).

Several speakers made the point that although the best-known exhibition venues in London were unlikely to be of use because of high costs of hire and services, there were other suitable halls in less central areas of London worthy of consideration. Societies should be asked to provide details of likely sites in their own areas to an Aquarium Show Exploratory Committee, which was elected from those present at the meeting: Mr. M. D. Cluse (Goldfish S.G.B.), Mr. Anthony Evans (Editor, The Aquarist), Mr. S. C. Jacobs (Pet Traders' Association), Mr. T. R. Lee (Lee, Reid and Co., Ltd.), Mr. R. Skipper (Hendon A.S.), Mr. F. Stone (F.B.A.S.). The form of presentation of a show was discussed in a preliminary way, with the desirability being stressed of staging the exhibits in an attractive manner likely to promote a paying high attendance by the general public whilst also meeting the requirements of competitive showing between aquarists' societies. It was suggested that it might be possible to place the business of organisation with a professional exhibition organizer, and the Exploratory Committee was asked to provide a report on all these matters within 2 months. It was inevitable that reference would be made to the British Aquarists' Festival held annually in Belle Vue, Manchester, and Mr. A. Boarder was able to tell the meeting of the huge success of the B.A.F. held last month, with an attendance for the 2 days that exceeded all previous records and with increased entries of exhibits.

It is too early to raise hopes of a London Show in 1965, but the initial move has been made, thanks to Hendon A.S. As Mr. M. D. Cluse said, there are still many active London aquarists with large-scale show "know-how" to be called upon, and it is to be hoped there would be sufficient people willing to give a "yes" in answer to Mr. R. Skipper's crucial question: "Are you willing to give up a week's holiday to put on a Show?"
The Aquarium Sword Plants

by Dr. R. O. B. LIST

Aquarists do not take sufficient care of water plants. Old habits die hard, and the majority of us continue simply to make a hole in the compost with our fingers, insert the plant in question and then hope for the best. Those who are keen gardeners will undoubtedly know that we plant our plants in the garden in varying manners—each one just that little differently from the other—and we get the results we expect.

Not so with aquatic or bog plants. If the plant comes up to expectation then it is a matter of luck and certainly not care or forethought. In fact it is only a few years ago that we considered that all plants that grow in water were aquatics, and it was never fully understood what is meant by bog plants.

There is an apparent lack of visible flowers on our plants, and aquarists tend to be surprised when flowers do appear. It is my contention that there is no need at all for surprise, and one should rather commence to look most closely at the plants that do not in fact produce flowers.

A point that appears to be little known is that if the plant is treated as a true bog plant, you will have flowers, most of which are white, and from these you can collect seeds which can be propagated. Plants which are fully submerged only propagate by runners and hence we have the 'chain' plants, which are Nature's method of overcoming its difficulties. You may well ask what is then the difference between the two and products. This is easily answered in two words: strength and size. I do not, by any means, decry the chain plant. It has many virtues and has well earned its popular reputation.

Another small oddity is the names that we give these plants. We call them Amazon or Malayan sword plants. Let us therefore look at some of the natural origins: we find Brazil, Cuba, North Africa, Mexico, U.S.A., Canary Islands, Patagonia and the West Indies. In attempting to establish a common factor which could possibly cover all of these areas, the only possible one that comes to mind is warmth.

Plants of the genus Echinodorus are the favourites of many aquarists and are much in demand as aquarium centrepieces. Although we regard them as aquatic plants in that they are bog plants, and the genus has at least 10 species.

The reference books all appear to agree in details about the size of these species, and although I have seen fairly massive specimens, I have never come across a plant with the given maximum size of 32 to 36 inches. Personal tastes might not be suited by a plant of such a size, but it is nevertheless said that they are available (Echinodorus paniculatus).

Echinodorus brevipedicellatus. This type is the one most generally known to aquarists and is not to be confused with E. tenella. Its habitat is Brazil. It is of the small-leaved variety, spear formed, which have the tendency to curve slightly in the middle. The leaves are found on stalks of 2 to 6 inches in length and can be up to 1½ inches in width. When treated as a bog plant, this is one of the varieties that throws a flower at the end of a 30 in. stalk. Submerged plants will give only chain propagation. To cultivate it use coarse sand with well-aged loam or the rare. Reasonably soft water is preferred to hard and sunlight is necessary. In the absence of sun, the plant takes kindly to artificial light. If the temperature is on the low side, the plant will remain small. The temperature should be 75° to 80° (18° to 30°C). When submerged plants will give only chain propagation. To cultivate it use coarse sand with well-aged loam in a very closed container. Reasonably soft water is preferred to hard and sunlight is necessary. In the absence of sun, the plant takes kindly to artificial light. If the temperature is on the low side, the plant will remain small. The temperature should be 75° to 80° (18° to 30°C).
sunny conditions and if one restrains the runners by cutting, the plant tends to become bushy. The practical temperature should be from 75° to 85°F (25° to 30°C). If it is kept colder than this range, the plant will not succumb but merely exists without any further growth. The leaves are very brittle and extra care is required to prevent breakages.

_Echinodorus longistylus_. This species will propagate from seed and also gives runners when fully submerged. Its leaves are lance-like and elliptical and grow up to 9 inches in length with stalks up to 20 inches long. It requires to be given more than the usual amount of room for good growth. Its habitat is Brazil. If used as a bog plant it will not flower unless it has plenty of sunlight. Temperatures should be 65° to 80°F (18° to 27°C) but it will take lower temperatures for periods without suffering. It cannot be kept as a fully submerged plant as the larger leaves will always take their tips out of water. Soft water is a necessity.

_Echinodorus martii_. This is a relatively new species in Europe and comes from Brazil. It has an extremely pretty leaf which is lance-like and can be from 1 to 2½ inches at its broadest width. The leaves also have curled edges with blunt points on stalks from 2 to 4 inches long. It requires more room than usual and particularly soft water.

_Echinodorus paniculatus_. This, the largest of the known sword plants, is very similar to _E. brevipedicellatus_ and is cultivated in the same manner. The leaves are lance-like and tend to bend slightly. They can be up to 20 inches in length and 2 to 3 inches at their broadest point.

_Echinodorus radicans_. This species is well known in Europe and is usually found in the southern area of the

U.S.A. and Mexico. The leaves are egg-shaped and are up to 8 inches in length. As a bog plant it grows to a great height and treated as an aquatic will always try to grow out of water. It requires as much sunlight as possible but will also take kindly to artificial light. If kept in a shallow depth of aquarium compost one can control the height reasonably well. Cultivation is by seeds and runners as in other species, but this plant will also give off secondary plants from the roots, which can be cut and transplanted elsewhere. This, however, only happens with older plants. The flower is white. It has erroneously been called _Sagittaria graminea_.

_Echinodorus ranunculoides_. This is often confused with _E. radicans_ but is seldom found in Europe. Its habitat is North Africa and the Canary Islands. As a bog plant
its flowers can either be white or red and as an aquarium submerged plant it will take kindly to relatively cold conditions.

*Echinodorus rostratus*. This appears to be also a relatively new species found in the U.S.A. and the West Indies. It has a variable type of leaf from the short to long and shaped from narrow to a broad heart shape. If kept as a submerged plant it will not give off runners but, unlike most other *Echinodorus* species, will give off secondary plants from the roots, which are then transplantable. Opinions differ as to best cultivation methods and suggestions range from a compost mixed with peat to a pure sandy compost. With the latter one requires plenty of base nourishment to promote proper growth. Soft water is preferred, plenty of natural light. If the plant grows too large one need only cut off the light supply.

This is also one of the many types of plants which do better with a 'quieter' period, instead of being required to look at its best for 365 days a year. The flower is white and the leaves are nearly transparent.

*Echinodorus tenellus*. This species is also sometimes confused with *Echinodorus brevispiculatus* and can be kept in warm as well as cold water conditions. It is usually regarded as one of the dwarfs as it grows only 4 to 5 inches high. It also tends to have grass-like leaves instead of the more substantial forms of the other species. If kept in tropical conditions as a submerged plant it needs plenty of sun and a growing medium of fine sand mixed with peat. When conditions suit it, it will propagate very rapidly with runners to give a carpet-like effect. The flower is white.

Thus it is seen that *Echinodorus* plants will easily adapt to varying conditions. One should always cut back the larger leaves to promote healthy growth, and larger plants are easily divided. *E. intermedius* is rather more brittle than the others, but each type should be carefully handled. Various shades of green are found in the species, with some of the leaves being translucent.

You might now ask what one does with the seeds collected from the flowers. Last year I planted them in wet sand, and not until the first leaves appear are they to be planted in an aquarium.

I would also suggest that when breaking a chain the new plants should not be planted in their home aquarium but put into new containers as plenty of room is a necessity. How does one handle a chain? This question has often been posed and unsuccessful attempts have been made to root a chain which has a 30 degrees angle (the usual angle, although sometimes one gets an angle of 45 degrees). My advice is to leave well alone. When the young plants are good and ready to find a root hold in the compost, the angle will decrease slowly to 15 degrees and then further downwards until the chain is horizontal. Nature has done its work for you, and your exasperation at trying to pin down a chain of anything up to 12 plants is totally unnecessary.

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**The Black-line Tetra**

*by M. J. PARRY*

The black-line tetra (*Hyphessobrycon scholzei*), native to the lower reaches of the Amazon, is often recommended to the beginner as the first egg-layer to breed. This is, indeed, good advice, breeding being accomplished in a manner applicable to many members of the large characin family.

The basic body colour of the fish is a whitish silver, with a broad black line extending from just behind the gill plate to the caudal peduncle, where it edges into the tail. An adipose fin is present. Maximum length of this species is 2 inches.

Probably the greatest prejudice against keeping this fish is its reputation of being a fin-nipper. This complaint in many instances is entirely justified, though by no means incurable. Provided that care is taken to restrict the fish to a carnivorous diet, and not to tempt it with the long flowing fins such as those of the angel fish, no harm will result.

Breeding is easily accomplished with adult fish. Although there are no obvious outward sexual differences females can be easily recognised by their plumper appearance against the slimmer male. Both fish should be separated for about 7 days, and fed on lavish amounts of white worm, *Daphnia* and *Tubifex*. The breeding tank should be set up so as to include neutral or preferably acid water, pH 6.5–7.0. It should be well planted with anchored bushy plants such as *Elodea densa*, hornwort, *Nitella*, etc., and be maintained at a temperature of 80°F (27°C). Both fishes should be introduced into the tank late at night in order that they may spawn early next morning. This is preceded by vigorous chasing by the male, resulting in the scattering of adhesive eggs by the female, which are immediately fertilised. Upon termination of spawning both parents should be removed to separate quarters as they are avid egg-eaters.

The eggs, which will be found adhering to the plants, hatch within 24 hours, the fry becoming free-swimming on the fourth day, after the absorption of their yolk-sac. Feeding can commence with the normal first foods of Infusoria or yolk of egg. Newly hatched brine shrimp should be provided as soon as possible, usually after the fifth day. On this diet the fry grow rapidly before moving to the next stage of finely sifted *Daphnia* followed by chopped *Tubifex* or white worms.
A Surprise Spawning

by P. E. Pavey

The first pair of dwarf gouramis I bought were about three-quarters grown. I had no intention of trying to breed with them straightway, and so put them into my large community tank (temperature 80°F, 27°C), which frankly at that time had been getting far too much light and was green with algae.

The gouramis, though shy, settled down well. Several weeks later, I was away for a few days and consequently did not see the large and beautiful nest of Riccia and Bolbocentrum which the male gourami constructed in a far corner of the tank. Nor did I see him become a blaze of blue and red—a flashing jewel of a fish. Returning home, however, and lifting up the hood of the tank, I did see, to my surprise, numerous dark specks just beneath the surface of the water, specks that resembled nothing so closely as fine tea dust. Those these gouramis were hastily collecting in his mouth and returning to the safety of his nest.

As gently as possible I removed the other the fish, nearly all of them incidentally much larger than the male gourami! When 4 days later not all his ingenuity could keep the fry within the confines of his nest, I removed him, too.

Incredibly tiny were those dwarf gourami fry. Even the algal microorganisms, Paramecium, which I had discovered in a jar of old flower water (chrysanthemum water actually) and put into a lettuce infusion, were too big for them at first. However, I continued, for the first 2 weeks, to tip jars of this in. Other food, I suspect, was being naturally produced in the tank. The excessive light had produced the floating algae, and the Riccia must have harboured a host of minute Protozoa. At any rate the fry thrived. Occasionally they were able to take micro worms. Finally chopped Tubifex and powdered dried food. Altogether I raised about a hundred dwarf gouramis.

On every occasion when I put the male and female together they spawned. The male's colours would glow instantly, and he would start to build his nest. The pair, and a day later I was away for a few days and consequently and their eggs floated up into the nest. The male would then take over, and I would remove the female.

However, there were occasions when the fry after a few days would dwindle disappointingly in number. One reason for this, I believe, was the draught caused whenever the hood of the tank was raised. Baby dwarf gouramis simply cannot endure a rush of cool air. So I kept a piece of blanket over the hood and never lifted it unnecessarily.

Air Transport of Fishes

Recommendations on how to transport live tropical fishes, amphibians and invertebrates successfully by air are given in the newly published Part 9 of the B.S. 3149 series of standards, which makes Recommendations for the carriage of live animals by air.

This new addition to the series deals in separate sections with the transport of goldfish, tropical fishes, the live eels of trout and salmon, frogs, toads, newts and salamanders, shellfish and honeybees. Each section covers in detail the packaging of animals, labelling of containers, stowage and care during transit and treatment on arrival. Copies of B.S. 3149, Part 9 Fish, amphibians and invertebrates may be obtained from the British Standards Institution Sales Branch, 2 Park Street, London, W.1, price 10s. (postage extra to non-subscribers).

A Merry Christmas
to all our Readers

from the Editor and Staff of The Aquarist

December, 1964
Stocking the Philatelic Aquarium

by A. G. K. LEONARD

Would you pay £75 for a tiger barb that had lost its black markings? The aquarist might not be interested, but it would be a different matter with the philatelist wishing to have a rare variety of the current 4 cents stamp from Singapore, one of the series depicting fishes found in Malayan waters (described and illustrated in The Aquarist, September, 1962).

The stamp should have been printed in black and orange-red, but somehow the two left-hand vertical rows of one sheet—printed by a leading British specialist firm who do not often make a mistake—had the black colour omitted, thus creating the 20 strange specimens that a Surrey dealer acquired and is offering at the price mentioned.

The aquarist wishing to form a colourful collection of stamp miniatures of tropical and other fishes need not count his pounds, however, for there are dozens of attractive designs available from all over the world at the much more modest cost of a few pence each. Suitably arranged and displayed, either in an album or mounted in frames as a wall decoration, these can provide a great deal of interest and pleasure, so that it is appropriate to survey some of the latest issues that have appeared since my previous article was published.

A different kind of stamp error is provided by the lowest value of the set with which Trinidad and Tobago acclaimed the achievement of independence on 31st August, 1962. This was officially described as an underwater picture of the Buccoo Reef, "a natural aquarium where thousands of multi-coloured fish may be seen swimming gracefully between the coral gardens", but it later transpired that the design derived from a painting hanging behind the bar of the Hotel Normandie, Port-of-Spain, commissioned 8 years ago from a local artist Mr. Carlisle Chang. He had never been to the Buccoo Reef, or anywhere under the sea, and had based his picture on illustrations in various geographical magazines of fishes frequenting Far Eastern rather than Caribbean waters!

Much more authentic are the fine studies of Red Sea fishes offered by two quartets from Israel, released at the end of 1962 and 1963. Modern Israeli stamps are outstanding for their artistry and fine multi-colour printing, and these two sets must rank among their best.

The subjects of the first set were Heniochus acuminatus, the pennant coral fish, the butterfly fish (Chaetodon lunula), Holacanthus imperator, the angel fish and Pterois volitans, the fearsome-looking lion fish, best-known of all scorpion fishes, which one writer has aptly called a "gaudy little nightmare". The last-named has also been depicted on a recent issue of Monaco, and another lion fish can be seen on a stamp from French Polynesia, released 2 years ago, also on one of the latest designs for the New Hebrides.

Israel's second fish set included a picture of the related Pterois radiata, the showy butterfly fish (Pomacanthus imperator), an orange-striped trigger fish (Balistapus undulatus) and Priacanthus hamrur, called big-eye.

Boosting themselves as "the enchanted isles of the Indian Ocean", the Maldives Islands issued a series of stamps early in 1963 depicting some of the tropical fishes that abound in the clear waters surrounding this romantic group of thousands of atolls. Designed by a Chicago artist, Robert Hegeman, they were painstakingly produced in multi-colour photogravure by a famous Dutch printer.
in eye-catching triangular format arranged in compact sheets of eight. The eight stamps share five subjects: the butterfly fish (Chaetodon lunula), Pagopelta diacanthus or angel fish, the surgeon fish (Acanthurus leucosternon), Heterocentrus diadem, known as squirrel or soldier fish, and Zanclus canescens, the most fantastically shaped and coloured of all marine aquarium fishes, the Moorish idol.

It also appeared on a 1963 stamp from the Wallis and Futuna Islands, whence came other miniatures of a wrasse (Thalassoma lunare) and Amphiprion percula, the hardy species often used to begin a salt water aquarium. Another clownfish, Lutjanus argentimaculatus, was one of the subjects of a quartet of imposing fish stamps released by Indonesia at the same time, and a few months previously Somalia had offered attractive stamp illustrations of Lutjanus rubricinctus, the emperor snapper, and Pomacanthus semicirculatus, blue angel fish.

In the same family, Chaetodon auriga, and a 1962 issue of French Polynesia and 2 years later a new series from the West African republic of Togo included a picture of the French or black angel fish Pomacanthus arcuatus. A companion stamp showed Zeus faber (John Dory), which also provided the subject for recent designs of Spanish Sahara, along with the bonita (Sarda undicolor), indicative of the wide range of fishes that can be gathered into the philatelic aquarium.

It can now contain some 300 different species from all over the world, pictured by scores of postal authorities. They now generally recognise the powerful collecting interest in these stamps by using scientific name identification of their subjects, and catering in varying degrees for the philatelic market—especially the newer and smaller states, to whose budgets collectors’ purchases make a not insconsiderable contribution.

Although marine species are more prominently represented in the stamp album, freshwater fishes offer plenty of scope to the collector, with examples coming from some unlikely quarters. North Viet Nam, for example, used a set of five in 1963 that included Tilapia mossambica, the Mozambique cichlid which is a little too large for the domestic aquarium, and Ophiocobitis, the snake head that has an insatiable appetite: hardy, cunning and a good loaper, it needs a covered tank.

(Continued overleaf)

Half of a sheet of eight stamps of one design
(Maldives Islands, 1963)

December, 1964
Another stamp in the series depicts the common carp, originating in Asia but now distributed throughout the world. *Cyprinus carpio* was also featured on a Russian design of 1962 and again in 1964 provided one of the subjects of a multi-coloured half-dozen from Albania showing larger freshwater fishes, also of the latest West German series, sold at a premium in aid of child welfare funds. Eight examples of fishes found in the rivers and lakes of Mongolia were illustrated on that far-off country's triangular stamps released at the end of 1962—colourfully produced by the Hungarian state printing press that was responsible for the fine miniatures of tropical freshwater aquarium fishes reproduced in *The Aquarist* in September, 1962.

Roumania is also prolific in its output of commemorative and propaganda stamps. A striking series in 1964 publicised the Constantza Aquarium with eight unusual designs ranging from the fascinatingly odd *Hippocampus* (Black Sea horse) to Danube salmon. A year before, Morocco had issued a special pair to publicise the Casablanca aquarium, one design including a not very good representation of *Protopterus scalars*, the freshwater angel fish.

One could extend this survey of philatelic fishes to include many more diverse examples from the Congo, Mauritania, several French island colonies and small sheikdoms on the Persian Gulf—all issued during recent months—but space obliges me to conclude with the attractive dozen released by Guinea in 1964. Their subjects include *Epilampus senequains*, *Hemichromis bimaculatus* and *H. fasciatus* of the family Cichlidae, noted for their complicated courtship behaviour, and three of the Cyprinodontidae or tooth-carp, *Aphyosemion gossei*, *A. coruscum* and *A. polare*, all brilliant and minnow-sized, whose eggs withstand long periods of desiccation and are offered to aquarists as “instant fish”.

Stamps cannot simulate their whirling courtship patterns, but at least the philatelic aquarium is trouble-free in breeding, stocking and maintenance, offering the aquarist an unusual sideline hobby, whose scope and interest is constantly extending.

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**Saving Livebearer Fry**

by AQUARIUS

To save livebearer fry from the hungry mouths of their parents two things are necessary; water so shallow by this we mean not more than about 8 in. deep—that the newly born fry are only a second or two removed from the security of the plant life, and plants that in their structure and manner of growth guarantee the greatest degree of protection.

Even in a community tank it is possible to preserve the lives of many fry if the plants at the surface offer a sufficiently dense refuge of closely packed foliage. Plants such as hornwort, *Lemna sp.* (Ambulia) and milfoil come high on the list of fry-saving plants.

But it is no use expecting about half a dozen sprays of any plant to provide an attack-proof retreat for the fry. The plants must be in sufficient quantity to form a haven extending over several inches of surface area and little less in depth; for then among the interstices of leaves and stems the instinctively alert fry will grow space quite untroubled by the presence of the cannibal fish beneath.

The reason for a barrier of vegetation inches wide as well as deep is to prevent the more persistent fry-eaters in a community tank from poking their snapping jaws through and above the foliage. Experience has shown that the most adept fishes in this respect are angelfish, Siamese fighting fish, large male swordtails and the fishes collectively known as panchax. In cases where it is thought best to give a female livebearer a tank to herself in which to give birth to her fry, the isolation must always be carried out when her abdomen first begins to swell. No livebearer female well advanced in pregnancy should be moved to another tank, for any shocks at this time are likely to harm her and her unborn fry.
Rockwork for the Aquarium

by BILLY WHITESIDE

ALTHOUGH aquaria can be decorated in a pleasing manner with plants alone, the addition of some rocks, suitably arranged, can produce a much more interesting and natural effect. The choice of suitable rocks to use is wide, but the point to bear in mind is that the rockwork should be of a suitable colour to blend in with the gravel in the tank. Garish colours in close proximity distract from, rather than enhance, the aquatic scene.

In making a choice of rocks one can consider natural rocks, obtained on a search of quarry, mountain or seashore; or one can purchase artificial rocks specially made for the purpose of aquarium decoration. Among the latter kind are those made of fibreglass. As well as being light in weight, these do not exude toxic materials which would harm fish or plants, but they are rather expensive and the colour range is limited. Being light in weight, they are an advantage to someone who lives in the centre of a city, and who does not have private transport or access to any naturally occurring rock, for they are easily obtained and transported. Anyone who has tried to transport home a few pieces of natural stone on public transport will know just how difficult the weight of these can be to manage.

Another advantage of fibreglass “rocks” is that they can be bought already shaped to fit specific tank sizes, and if these are found to be unsuitable, the “rocks” can be cut to the required shape quite easily. Gravel should be used to harmonise with the colour of the rocks purchased.

To keep an aquarium clean and to provide decorative rockwork, one need search no further than one’s back yard. The use of coal in the aquarium has been advocated by a number of aquarists who maintain that not only does the water keep crystal clear, but the plants and fish all thrive better under these conditions. The obvious drawback is the colour of coal, but painting can produce a finished product which, after washing, soaking and becoming coated with a light growth of algae, can be an attractive feature in any tank.

There are on the market filters which have built around them an artificial rock structure. As well as being decorative, these disguise the filter, which in turn keeps the tank water clean.

Other tank decorations can take the form of brightly coloured gravel, which will certainly add a splash of colour to a tank, but unless this is wanted for its novelty value, it seems rather out of place in the tank which is trying to emulate natural conditions. Sea shells or coral are another possibility, but if these are to be used, it is better to buy them from a dealer, as all organic matter should be removed before introducing them to a tank, otherwise it could lead to fouling of the water.

Commonest of all tank decorations is natural rock. Here the choice is governed by stones which are not soluble in aquarium water and thus are excluded such stones as limestone. Impurities which dissolve may cause damage to fish or plants. My own favourites are pieces of light coloured flints, which are usually easily picked up on the sea-shore—especially after a high tide or a storm. Pieces varying in size can be chosen to fit the particular needs of the aquarium to be decorated.

Flints thus collected from the shore have the advantages of having been well soaked in the water so that any soluble impurities have been removed, and of having rough or sharp edges removed by the action of the tides. This latter point is important no matter which type of rock is included as it is possible for fish to damage themselves when frightened, if they happen to strike sharp edges. Water smoothed rocks also give the natural impression that they have been rounded by flowing water, as is natural in the streams from which a lot of our fish come. Flints or other rocks collected should be given a good scrubbing to remove growths of algae, and should be given a soaking in fresh water—a prolonged one if stones are not from sea or river. Water for soaking should be changed several times.

Finally there comes the task of siting the rocks in the tank. Gravel should be chosen, an attempt being made to get the necessary texture and colour correct. Some people delight in building little arches through which fish can swim, but unless care is taken with such arrangements, they look rather contrived; however, the arrangement rests...
The Pigmy Sunfish

by JACK HEMS

ONE of the most interesting of the North American freshwater sunfishes (Centrarchidae) is the peaceful little Elassoma everglades. The pigmy sunfish, or dwarf sunfish, as it is commonly called, is found in the wild from North Carolina southwards to Florida, and seldom exceeds a length of 1½ inches. The laterally compressed body is quite long in proportion to its depth, and it is to be noted that unlike most of the centrarchids kept in captivity there is no lateral line.

To keep the species satisfactorily it should have a tank to itself; for when it is placed in a community aquarium it is apt to get pushed away from food, and generally upset by the other fishes' more rough and tumble habits.

The tank for a pair need not be more than, say, 18 inches long. But it should be well lighted and have dense thickets of submerged vegetation along the back and ends. An all-the-year-round temperature of 70°F (21°C) to 75°F (24°C) suits it very well (for ordinary maintenance and breeding), but a slow drop in the late autumn to an even 60°F (16°C) does no harm. In fact, some authorities say that overwintering at a rather low temperature makes for more robust health and ensures greater success in spawning. As regards food, this should be alive as, like all sunfishes and basses, E. everglades is essentially carnivorous, and such things as white worms, Daphnia and mosquito larvae are greatly relished.

The general colour of the male varies from brown to green, jewelled here and there with flashing scales interspersed with black spots and six or seven brown to black vertical bars. The well developed dorsal, anal and rounded caudal fins are greyish, sometimes with dark bases and edges. The female lacks the sparkle and deep tones of the male, and her fins are smaller and usually colourless. At this point, however, it must be pointed out that the pigmy sunfish can change whatever colours it may be wearing to an overall muddy hue. Sometimes it will wear this drab apparel for hours or days on end to demonstrate its dissatisfaction with its surroundings or, perhaps, the quality of its water, which to really suit it should be soft and of a neutral to acid character.

E. everglades divides its days between taking fairly frequent tours around its tank, or resting in or near the plants. As to spawning, and the temperature (see above) and the season (spring and summer) are right, this will almost certainly follow as a matter of course. Extra activity and the donning of new colour patterns and colours are the preliminaries concomitant of the spawning act. And perhaps the most apparent changes in the appearance of the sexes at this time are the darkening of the male's body and fins, and the plumming and reddening of the female's lower sides.

Sometimes there is some gentle sparring about and chasing, and then the pair settle down to the business of laying their eggs. These are usually deposited on plant leaves growing near the bottom, or in a sort of makeshift nest composed of collected plant debris. Sometimes spawning is all over in a few hours, but it is not uncommon for the fish (which do not always adhere to a strict routine) to continue spawning on and off for several days on end. It takes about 48 hours for the eggs to incubate, and about the same time or a little longer for the fry to become free-swimming. As a rule, the parent fish make no attempt to eat the eggs or fry, which should be given Infusoria for about the first fortnight of their existence. After that, all the regular minuscule live foods should be placed on the menu, that is to say Grindal worms, tiny Daphnia, brine shrimps and the like.

With frequent feeding the baby fish grow so rapidly that 3 months after hatching out they should be showing most of the markings worn by the adults. Clearly, then, in its own charmingly modest way, the pigmy sunfish has much to offer the aquarist in the way of interest and beauty.

Rockwork for the Aquarium

(continued from page 161)

entirely with the individual. As the rocks are there to offset the fish and plants, they should not distract from these, but complement them. A large piece of stone placed in the exact centre of the tank is inclined to look rather incongruous, and more pleasing results are often achieved by trying to simulate natural rock strata outcrops, with perhaps some larger rocks in each corner, graduating down to smaller ones near the centre. I find the inclusion of one or two large rocks as a focal point of interest, is more pleasing than a host of small fragments. If fish are able to swim behind a large rock and then reappear, an impression of greater depth is added to the aquarium.

To soften the line of larger rocks which are inclined to be rather harsh in outline, plants can be placed in front to break up their visual mass. A piece of cardboard, cut to the size of the tank base, is useful to try out potential ideas in arrangement until an aesthetically pleasing one is obtained. It then only remains to transfer the rocks to the appropriate position on the gravel of the tank floor. This can be done either before or after the water is added to the tank.

No matter what decorations are chosen, care should be taken to see that no small pockets are left between rocks. In these fish or excess food may become trapped, and their subsequent decomposition can be an unseen source of pollution to the whole aquarium.
White Spot

A regular reader of long standing, I would like to say how much I continue to enjoy your magazine. I remember previously reading Dr. Ghadially's articles on white spot, and have enjoyed re-reading them, but I think I can now add a useful point here.

The statement with which I disagree is that it is unjustified to use methylene blue in a furnished aquarium because even in fairly weak concentrations, it kills or at least seriously damages most plants. The point which has been missed is that the methylene blue cuts off the light to the plants, and it is this rather than any direct toxic effects which affects the plants. The answer is to use methylene blue but at the same time change the bulbs over the tank to at least double the wattage. I have done this in my fish house for years now, with complete success. The only plant I can remember losing is Indian fern, and even this has not died if it was floating.

I found that it was quite impossible, in my thickly planted tanks, to move infected fish to a bare tank without splashes and drips which risked infecting the other tanks round about.

J. A. B. JEFFREY, Kirkcaldy, Fife.

THE one consequence of the use of methylene blue in the treatment of white spot disease that I have found is that some fishes appear to lose their appetites whilst in the solution. Although this does not matter very much for the period of 10 days that the treatment is applied if the fishes are well nourished at the start, it does lead to losses of thin and undernourished specimens such as those newly arrived from abroad. Since it is most often these very same specimens that are infected with white spot, and therefore are in need of the treatment, methylene blue falls short of being the perfect remedy. However, despite this fault and the disadvantage of being unable to see what is going on in a tank under treatment I do not now of a more reliable way of dealing with this disease.

T. ROGAN, Morden, Surrey.

Technique for Tropical Marines

HAVING read the above-titled article (The Aquarist, November), I am constrained to write in reply. While the hobbyists in Stoke are to be commended for their enthusiasm, I was surprised to read that they clean the inside corners of their tanks with, of all things, detergent. The problems which are given by the use of the conventional tank can be obviated if one invests in a tank which has a plastic-coated frame and is glazed with Glasticon or Blackmagic. There is then no need to line the inside corners with an epoxy resin, which is toxic anyway unless very well cured. I cannot agree that their method of heating is the best way, when we have on the market today a very extensive range of thermostatric heaters, which when used properly have only the glass tubes immersed in the water. Employing their method, one would be continually worrying in case the bulb failed, or the glass bottom of the tank cracked with the heat. I wonder how they knew that it was a leakage of electricity that killed their fish? More than likely it was ill when they got it, as marine disease does not manifest itself until about 3 weeks have elapsed. At least one man in Glasgow has kept the same fish for most of 4 years. A friend has kept a butterfly (Chaetodon vagabundus) for a year. This is reputed to be a difficult fish to keep alive in the aquarium. One of my butterfly fish (Chaetodon melanotus) I have had in my tank for 6 months. I have been keeping marine for a little over 2 years. A Glasgow dealer had a wimple fish, which when imported was the size of a penny, and it grew to the size of a saucer and lived for 2 years 9 months, until its demise through a sudden change in pH. He also kept a scorpion fish on display for 9 months. As regards feeding, I think many marine hobbyists will agree that white worm should be fed only very occasionally. The fish acquire a taste for them and tend to refuse other foods. Scraped beef is best fed immediately it is scraped, and the problem of pollution does not arise if the proper amount is used. Undoubtedly the best food is mussels, raw or cooked. Algae is good as a water conditioner and as a supplementary food, but is not strictly necessary. If desired it can be grown in artificial salt, so if the hobbyists in Stoke are getting good results with their medium, why go to the bother of putting the corals or stones in real sea water to promote the growth of algae? The water does not require changing as often as they recommend, about a tenth of the tank capacity every month being sufficient, unless, of course, there are a lot of fish. If the fish are fed properly, the filter needs attention only about once a fortnight.

F. J. J. MCMENAMIN, Craigton, Glasgow, Scotland.

December, 1964
British Aquarists' Festival, 1964

The 1964 British Aquarists' Festival at Belle Vue, Manchester, has been another great success. On the Saturday there were very many visitors to the show, but on Sunday, the hall was packed out the whole time the show was open. This despite the fact that the hall was larger than ever before, being 150 yards long by about 25 yards wide. The society stands were again very attractive and the one set up by the Isle of Wight Aquarists' Society, the "Aqua Villa", although not the first prize-winner, was excellent. This entry was the only one from the south and the former club must be doubly congratulated for their enthusiasm and efforts.

Among the tropical fishes the 'big 'uns' won the day, with splendid tinfoil barbs and oscars (Astronotus ocellatus) much in evidence. The best fish in the show award went to a magnificent marbled cichlid some 9 inches in length with an astonishingly bright and prominent series of red markings on its head and flanks (owner Mr. J. Mitchell, Sheffield A.S.). Best tropical egg-layer was judged to be a tinfoil barb about 8 inches long (owner Mr. K. Parks, Merseyside A.S.) and best tropical livebearer was sailfin mollie (owner Mr. M. Davies, Derby A.S.).

The coldwater fishes were much better than those on show last year. There were some very good common goldfish (best coldwater fish award went to a common goldfish owned by Mr. H. Chorlton, Northern Goldfish Society), and the shubunkins were improved. It was good to see such grand colours in these fish, with a bright blue and bright red, jet black and slight brown and violet colours. Some of the shubunkins were a little too heavy in the body for Bristol's, but they certainly had the colour that is sought after. There were no veiltails worth looking at. One would be forgiven for singing 'Oh! Where have all the veiltails gone?', but this is not the only show at which they have been missing. Some years ago there used to be some grand veiltails about but good ones have been missing at shows for years.

There were a couple of good oranjas which would have been more highly pointed had they had a deeper hood and not such forked tails. One small lionhead was quite good, having a very deep body and good hood. The moors were not too good. The large ones were too bronzey and the better coloured ones were small. The class for British coldwater fishes contained some quite large green tench, but it is doubtful whether it is a good idea to have such large fishes in medium sized tanks for a show lasting some 3 days. The breeders' class had two teams of very good shubunkins and in the winning team there was a beautiful little fish with the admired streamlined shape and the fine silk-like skin. This one should make a winner in any shubunkin class. Full results are given on page 165.

The AQUARIST Crossword

Compiled by L. BRADLEY

CLUES ACROSS
1. Brachydanio albolineatus (5, 5).
2. Tilt of universe (4).
3. Are these fish fed on coal? (10).
4. Through which smaller inhabitants of the aquarium can be seen (4).
5. Pillars (5).
6. Carried in vein (5).
7. A girl in terror (5).
8. See 16 down.
9. Type of barnacle found on oak trees? (5).
10. See 7 down.
11. Family to which 10 across belongs (7).
12. This fish is Corydoras annulatus (5).
13. To follow after (3).
14. To expel, be around and see her at a wedding (5).
15. A single occasion in the symphony concert (4).
16. Fish which has a map that is arranged for land or sea (10).
17. Not soft (4).
18. Fish given as a token of appreciation for services rendered by a waker? (6, 4).

CLUES DOWN
1. Prepare for publication when the tide comes up (4).
2. Grows by the pond side (4).
3. Wild (5).
5. French secret army is found in the desert (5).
6. Winds its way across 21 across (5, 5).
7. Common ringed serpent (5, 5).
8. Commissioned in the regular army (7).
9. Fished for the most part but wholly complicated (7).
10. Astyanax aequifrons (5, 5).
12. Dace swims around the point and gives a movement to music (5).
13. To one side (5).
14. Alloy that is extremely poisonous to fish (5).
15. Drive forward the little devil before the Spanish (5).
16. The best of fish food? (5).

Solution on page 187

THE AQUARIST
**NEWS from AQUARISTS’ SOCIETIES**

Monthly reports from Secretaries of aquarists' societies for inclusion on this page should reach the Editor by the 15th of the month preceding the month of publication.

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**BRITISH AQUARIST FESTIVAL**

Best Fish of the Show: J. Mitchell (Sheffield). 

Other than Best Fish to Show:

Tropical plaques: 1. K. Parker (Plecoide); 2. M. Davis (Darby); 3. T. H. Good (Norton Goldfish). 

Novelty plaques: 1. N. H. Hailey (Blackpool); 2. G. P. Scott (Darby); 3. W. H. Ransome (Norton Goldfish). 

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**NEWS from the Dundee A.S.**

Given the results of the Dundee—Perth inter-club show, there were several notable winners: 1. M. Davis (Darby); 2. W. M. Thompson (Perth); 3. J. H. Good (Norton Goldfish). 

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**THE KEIGHLEY AND DISTRICT A.S.**

Hold an exhibition at the Keighley and District Agricultural Show which was a great success. The winners were: 1. J. H. Good (Norton Goldfish); 2. W. M. Thompson (Perth); 3. J. H. Good (Norton Goldfish). 

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If every society had its own register where every spawning must be entered and certificates issued not later than three years after the event, it would be easier to follow the progress of the national records. 

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The programme was provided by the Northern Ireland Federation and was a show of the highest standard. The accompanying scripts evoked favourable comments from both participants and spectators.
A TABLE show was held by Portsmouth A.S. on a trolley and pond in the community centre. Whilst judging was taking place Mr. Hunt gave a very interesting talk on water life. It is hoped to extend the tropical section at the open show to accommodate an extra 10 entries next year.

The table show results were as follows—Common river or pond fish: G. W. Ryder (common loach); 2, G. G. Smith (rudd); 3, S. S. Norton (tench); 4, J. Howard (gudgeon). Golden river or pond fish: G. G. Smith (tench); 2, A. J. Norley (goldfish); 3, S. S. Norton (gudgeon); 4, T. J. J. Hinsby (goldfish). Breeder's goldfish: 1, L. J. Norley; 2, A. J. Norley; 3, J. A. C. Bottomley; 4, A. J. Norley (goldfish); 5, G. G. Smith (gudgeon). All other species: 1, M. J. J. Hinsby; 2, A. J. Norley; 3, T. J. J. Hinsby; 4, G. G. Smith; 5, I. W. S. Bateman.

At the annual general meeting of the Oldham and District A.S. the following officers were elected: President, Mr. M. H. R. Taylor; Vice-President, Mr. W. D. Brodie; Secretary, Mr. W. D. Brodie; Treasurer, Mr. G. T. G. T. Stacey; Assistant Secretary, Mr. A. J. Norley; Assistant Treasurer, Mr. G. T. G. T. Stacey; Auditor, Mr. G. T. G. T. Stacey; Secretary, Mr. M. H. R. Taylor; Auditor, Mr. G. T. G. T. Stacey; Treasurer, Mr. W. D. Brodie; Assistant Secretary, Mr. A. J. Norley; Assistant Treasurer, Mr. G. T. G. T. Stacey; Auditor, Mr. G. T. G. T. Stacey.

A report of good progress was given by the Secretary Mr. A. J. Norley, who explained that the Society was now in a sound position financially and was looking forward to a successful year.

THI Houslow and District A.S. held their final shield show recently and the winners were as follows: Best group of fishes, Mr. H. F. H. Hunt; Best new plant, Mr. H. F. H. Hunt; Best plant, Mr. R. B. B. Hunt; Best fish, Mr. H. F. H. Hunt; Best aquascape, Mr. H. F. H. Hunt; Best water, Mr. H. F. H. Hunt; Best aquarium, Mr. H. F. H. Hunt.

FROM Kingston and District A.S. we hear of the death recently of Mr. J. Rawlings of South Wivbeck Road, Ashton-under-Lyne, who was well known in the London area, and built up a wide circle of friends and a good reputation as a hobbyist. In earlier days he was connected with the Thames River Club and was well known for his splendid collections of fish and aquatic plants. Mr. Rawlings was a past member of the Society and displayed many fine specimens at the shows.

THE Warrington A.S. now hold their meetings in the Ring of Bells Inn, Church Street, Warrington, as every fourth Thursday. Anyone interested should contact the Secretary, Mr. J. H. J. Johnson, 2, Wood Road, Runcorn, Middlewich, the secretary is Mr. I. B. Woodrow, 6, Ellerston Road, Runcorn.


A FINAL crowning success was achieved by the Workers and Aquarist, & Zoological Society, when they won the inter-society competition by point numbers. Before this fourth and last leg of the show, Workpool had a slender lead of one point, but due to the fine quality of the tropical fish shown by Mr. L. E. Wootton, they had equalized and stood one and one. Mr. Wootton with one first, Mrs. J. J. C. L. with one second, Workpool had a final total of 35 points for the four shows. She, then came second with 28 points, Manfield was third with 7 points and Chapeltown was fourth with 5 points.

THE THURBOUR and District Aquarist have had a busy time recently. An aqua-bazaar has been held in connection with the members of All Saints Parish Guild in order to raise funds for the Church. The bazaar proved to be a great success, and the sum of £271 was raised—a record for the bazaar. It is felt that the attraction of the fish show helped considerably to achieve this result. There were approximately sixty species on view to the public plus the attraction of twelve people, who paid 10/- per auction. There was a large display of animal, mainly tropical, one coldwater, plus a goldfish pond.

The Thurboir club meet at their hall in Green Lane, Grays every fortnight on Monday at 8 p.m. All new members or intending new members are welcome.

RECENT activities of the York and District A.S. have included a talk by R. M. Parkin, of York, on keeping and breeding tropical fish with particular reference to orchids. There has been a visit to Wakefield and District A.S. for a protecting microscope lecture of aquatic insects by Mr. M. Arbuthnott, of York. The result of an aquarium variety show was 1, Mrs. M. Turvey, Wakefield, thick-tailed gourami; 2, J. Smith, Wakefield (moon patty); 3, Mr. D. Green, Wakefield (gourami). The winner of the year's competitions was Mrs. M. Turvey, with a single specimen. A Grand Mixed Aquarium competition was also held, and Mr. J. H. Gunther won a prize for the best aquarium. There was a visit to the York and District A.S. by the Midland and District Society, which was well attended. The visit included a visit to the York and District A.S. and a talk by Mr. J. G. Parkin, of York, on breeding tropical fish. The York and District A.S. held a visit to the York and District A.S. where a visit to the York and District A.S. was well attended. The visit included a visit to the York and District A.S. and a talk by Mr. J. G. Parkin, of York, on breeding tropical fish.

The awards were presented by Mr. M. A. W. and Mr. N. Rice, of York. The awards were presented by Mr. M. A. W. and Mr. N. Rice, of York. The awards were presented by Mr. M. A. W. and Mr. N. Rice, of York. The awards were presented by Mr. M. A. W. and Mr. N. Rice, of York. The awards were presented by Mr. M. A. W. and Mr. N. Rice, of York. The awards were presented by Mr. M. A. W. and Mr. N. Rice, of York. The awards were presented by Mr. M. A. W. and Mr. N. Rice, of York. The awards were presented by Mr. M. A. W. and Mr. N. Rice, of York.
selected. There were 76 entries, and the judge was Mr. B. Jones. The well-known aquarist and aquascaper, Mr. R. Twitchell, was the judge.

To mark the occasion the club had invited Mr. D. Wastell of Bristol to show the latest aquariums and breeding of various tropical fish. These fish are remarkable, taken over a number of years, each generating months of preparation, and great credit is due to Mr. Wastell for the patience, time and care he has devoted to them. One of the Westminster residents in the London area for several years, and attending various exhibitions and shows considering these fish has now seen the best yet shown by the hobby.

The event was well worth while. While the best fish of the show was taken by a Mr. P. Sturgeon of Preston with a rainbow, Mr. P. Sturgeon was also awarded the best species for his species. The winner of the best class was: Latonia, and the best in class was: I. P. Sturgeon, 2. I. D. Dold, 3. I. S. Jones.

The winners of the various classes were: Latonia temminckii, 1st, I. P. Sturgeon; 2nd, I. D. Dold, 3rd, I. S. Jones; and 4th, I. S. Jones.

The judging of the event was held on a table in the Fish World Club in the Boulevard on the fourth day of the event. Each judge was praised and can be assured of an interesting evening.

THE WINNER of the points trophy for best average of all table shows was the A.S. for 1965-66, the champion of the show was Mr. P. C. Campbell. The other table show results are as follows: 1st and 2nd, Mr. R. Campbell, 3rd, Mr. A. B. Baxendale, 4th, I. D. Dold, 5th, I. S. Jones, 6th, I. P. Sturgeon, 7th, I. S. Jones, 8th, I. D. Dold.

The judging of the event was held on a table in the Fish World Club in the Boulevard on the fourth day of the event. Each judge was praised and can be assured of an interesting evening.

THE NEW SOCIETY

A new club has been founded in Redhill, to be called the Redhill and Reigate Tropical Fish Association, Mr. R. A. R. Taylor, Mr. P. C. Campbell, Mr. P. C. Campbell.

The first meeting of the society is to be held on the evening of 20th October at 7.30 p.m. in the Fish World Club in the Boulevard. All communications and inquiries should be sent to Mr. P. C. Campbell, 107, Prince Albert Square, Eastwood, Redhill, Surrey.

THE LEONE A.S. usual meeting night coincided with another night meeting on the previous evening, and he held a very interesting talk from his president, Mr. Eric L. Taylor, chairman. He spoke on aquarium plants, discussing in great detail such points as the maintenance of aquatic areas for the aquarium, different plant varieties. He also mentioned planting and propagation techniques.

During the past few weeks the Independent A.S. has been very active with field trips and lectures. A miniature furnished aquarium competition was successfully arranged for, and the judging was highly praised by the organizers and competitors.

The furnished aquariums in miniature, which was being run in the earlier years of the society, with approximately 120 doors and entries, were won by Mr. W. Rees. Entries were judged on originality. The entries were evaluated on a scale of 10 to 8, and were supplied, and to the smallest of sizes this called for some ingenious methods in plant and rock planning, such as the selection of coral heads for decoration of fish tanks and Inspiration. At the Independent A.S. meeting was judged with a fine entry of black moths in his tank. The second interesting meeting comprised a table display and a talk on fish housed construction by Mr. F. Tomkins. This talk dealt with new ideas in the field, and its innovative features may have a marked effect on those who have the hobby already in operation. The results of the talk were as follows: A.O.V. taken fish; 1st, Mr. F. Tomkins; 2nd, Mr. R. Gillies, 3rd, Mr. R. Faggell; 4th, Mr. W. Sturgeon; 5th, Mr. J. Clarke; 6th, Mr. M. C. C. Clarke; 7th, Mr. J. Clarke.

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The next meeting of the Independent A.S. will be held on the evening of 20th October at 7.30 p.m. in the Fish World Club in the Boulevard. All communications and inquiries should be sent to Mr. P. C. Campbell, 107, Prince Albert Square, Eastwood, Redhill, Surrey.

THE OFFICERS of the Yeovil and District A.S. for the next twelve months are: President, Mr. E. J. Storer; chairman, Mr. G. A. Ambrose, treasurer, Mr. C. H. Bennett; secretary, Mr. C. J. C. Perry, Fish, St. Michael’s Avenue, Yeovil.

Meetings will continue to be held at The Elephant and Castle Hotel at 7.30 p.m. on the first Thursday in each month.

The November meeting was coupled with a coldwater table show and a 1964 coldwater show. Results were as follows: Single fish; 1st, Mr. Nicholls (mosaic); 2nd, Mr. S. Langdon (shubunkin); 3rd, T. C. Perry (shubunkin), breeders; 1st, T. C. Perry (mosaic); 2nd, I. C. P. (shubunkin).

A TABLE SHOW for breeders classes Tropical and Coldwater was held at Portsmouth A.S. on the Community Centre, West End, Portsmouth. The judge was Mr. R. Marley of Bournemouth. The judging was taking place, and many entries enjoyed an excellent talk given by Mr. J. Stillwell on Fish, and how to keep fish. He demonstrated for the benefit of the newcomers who were present, how to check the water, and showed the equipment he brought with him. He then demonstrated how to keep fish in the aquarium, and how to maintain it; also repairs that can be carried out on the aquarium, such as follow: Livebearers: 1st, Mr. E. Warren; 2nd, Mr. M. Mason; 3rd, Mr. J. Clarke; 4th, Mr. J. Clarke. Fish: 1st, Mr. M. Mason; 2nd, Mr. W. Elston; 5th, Mr. J. Clarke. Invertebrates: 1st, Mr. M. Mason; 2nd, Mr. W. Elston; 3rd, Mr. J. Clarke. Breeders: 1st, Mr. E. Warren; 2nd, Mr. M. Mason; 3rd, Mr. J. Clarke; 4th, Mr. J. Clarke.

Crossword Solution

PEARL: DANNIOE R
DEER: A LIAR
FIRESMOUTH: V W
TIGHT: I E N S
POST: R S T O R E
BLOOD: F A M I S S
ACORN: G I N D I E
YELLOW: C I C I C I L I D I
KNIFE: F E E N S E
MEN: B R I D I
ONCE: R M L U
L L AMPHIBIANS: O U D S T I T N A
YEAR: S I L V E R T I P S

December, 1964

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Breeder pack 6/9
1 litre drum 22/6
**POSTAL SERVICE**

**TROPICAL FISH**

**TROPICAL FISH LIST NOV./DEC. REGULAR STOCKS ARRIVING WEEKLY**

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<tr>
<td>Red Nose</td>
<td>1 each</td>
</tr>
<tr>
<td>Silver</td>
<td>1 each</td>
</tr>
<tr>
<td>Feather Fish</td>
<td>1 each</td>
</tr>
<tr>
<td>X-Fish</td>
<td>1 each</td>
</tr>
<tr>
<td>Rosacea</td>
<td>1 each</td>
</tr>
<tr>
<td>Beacon G.S.</td>
<td>1 each</td>
</tr>
<tr>
<td>Swordtail Characin</td>
<td>1 each</td>
</tr>
<tr>
<td>Black Widow G.S.</td>
<td>1 each</td>
</tr>
<tr>
<td>Belgian Flag</td>
<td>1 each</td>
</tr>
<tr>
<td>Black Neon</td>
<td>1 each</td>
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</tbody>
</table>

| Bloodfish | 4 each |
| Pecos | 4 each |
| Blood Cast | 12-pair |
| Silver Hatchets | 7 each |
| Rainbow | 2-pair |
| Abornos | 2-pair |
| Swordtail | 2-pair |

<table>
<thead>
<tr>
<th>LIPPIA</th>
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<tbody>
<tr>
<td>Slender</td>
<td>15-pair</td>
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<td>15-pair</td>
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<td>15-pair</td>
</tr>
<tr>
<td>Slender</td>
<td>15-pair</td>
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| Gourami | 4 each |
| Gourami | 4 each |
| Gourami | 4 each |
| Gourami | 4 each |
| Gourami | 4 each |
| Gourami | 4 each |

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<tr>
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<td>8 each</td>
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<tr>
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<tr>
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<th>BARBAS</th>
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<tbody>
<tr>
<td>Harlequin</td>
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<td>8-pair</td>
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<tr>
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<td>8-pair</td>
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<table>
<thead>
<tr>
<th>BARRBS</th>
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<tbody>
<tr>
<td>Tiger</td>
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<tr>
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<td>2 each</td>
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<table>
<thead>
<tr>
<th>CATFISH &amp; LOACHES</th>
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<tbody>
<tr>
<td>Corydoras</td>
<td>4 each</td>
</tr>
<tr>
<td>Corydoras</td>
<td>4 each</td>
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<tr>
<td>Corydoras</td>
<td>4 each</td>
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<tr>
<th>SHARKS</th>
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<tbody>
<tr>
<td>Black</td>
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<table>
<thead>
<tr>
<th>MARINE FISH</th>
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<tbody>
<tr>
<td>Clowns</td>
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<tr>
<td>Clowns</td>
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<table>
<thead>
<tr>
<th>VARIOUS OTHERS</th>
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<tbody>
<tr>
<td>Malayan Angels</td>
<td>10 each</td>
</tr>
<tr>
<td>Malayan Angels</td>
<td>10 each</td>
</tr>
<tr>
<td>Malayan Angels</td>
<td>10 each</td>
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<td>Malayan Angels</td>
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<td>Malayan Angels</td>
<td>10 each</td>
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<tr>
<td>Malayan Angels</td>
<td>10 each</td>
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<table>
<thead>
<tr>
<th>KEITH BARRACLOUGH</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>215 GRT HORTON ROAD - BRADFORD 7 - YORKSHIRE</td>
<td></td>
</tr>
<tr>
<td>Telephone: BRADFORD 73372</td>
<td></td>
</tr>
</tbody>
</table>

All fish guaranteed live delivery and in good disease free condition. 7/6 rail and packing charge to be included with every order. See separate list for Plants, etc. All consignments of fish to be collected from nearest railway station.

**DWARF CICHLIDS**

<table>
<thead>
<tr>
<th>Kribensis</th>
<th>16-30</th>
<th>1-4 each</th>
</tr>
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<tbody>
<tr>
<td>Apistogramma</td>
<td>8 each</td>
<td>8 each</td>
</tr>
<tr>
<td>Amphilophus</td>
<td>12 each</td>
<td>12 each</td>
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</table>

**DANIOS**

<table>
<thead>
<tr>
<th>Specios</th>
<th>2 each</th>
<th>2 each</th>
</tr>
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<tbody>
<tr>
<td>Danio</td>
<td>2 each</td>
<td>2 each</td>
</tr>
<tr>
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<td>2 each</td>
<td>2 each</td>
</tr>
<tr>
<td>Danio</td>
<td>2 each</td>
<td>2 each</td>
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</tbody>
</table>

**SHARKS**

<table>
<thead>
<tr>
<th>Black</th>
<th>6 each</th>
<th>6 each</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>6 each</td>
<td>6 each</td>
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<td>Black</td>
<td>6 each</td>
<td>6 each</td>
</tr>
<tr>
<td>Black</td>
<td>6 each</td>
<td>6 each</td>
</tr>
</tbody>
</table>

**VARIOUS OTHERS**

| Malayan Angels | 10 each | 10 each |
| Malayan Angels | 10 each | 10 each |
| Malayan Angels | 10 each | 10 each |
| Malayan Angels | 10 each | 10 each |
| Malayan Angels | 10 each | 10 each |
| Malayan Angels | 10 each | 10 each |

December, 1964
SOUTH COAST AQUATIC NURSERIES LTD.

COLN BROOK  .  SLOUGH  .  BUCKS

STAR PUMP

Diseasolve
A Safe Antiseptic
For Cleaning
Live Food
Before Feeding

Suregrow FISH FOODS
Standard
With Nature's Nutrients

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Available from your dealer TO-DAY

TH E AQUARIST
OWEN REID'S
UNSurPASSED FOR TROPICAL FISHES

BIGGER THAN EVER VARIETY

VISIT THE MOST COMPREHENSIVE COLLECTION OF TROPICAL FISH IN THE MOST BEAUTIFUL SHOW-ROOM IN LONDON

Where you are assured of prompt and courteous attention. Large stocks are held of all the better makes of Heaters, Thermostats, Aerators, Piston Pumps, Filters, Tanks, Stands, Light Hoods, Books and Publications, etc. Live foods fresh daily.

12 SPRING BRIDGE ROAD
EALING BROADWAY
LONDON · W5

HOURS OF BUSINESS—
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Early closing day Wednesday (1 p.m.)

Phone: EALING 3259

New Branch Shop
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NORTH FINCHLEY
LONDON N.12

HOURS OF BUSINESS—
Monday to Saturday, 9 a.m. to 5.30 p.m.
Early closing day Thursday (1 p.m.)

Phone HILLSIDE 5510

December, 1964
NEW!
from the Manufacturers of
the famous Hobby Foods

BLUE DAILY
VACUUM PACKED!
Because "Blue Daily" is vacuum packed it is as fresh when you open it as when it left the factory
Because natural foods such as daphnia, cyclops and mosquito larvae are the most important ingredients, the growth of the fish will be helped, and the health of the fish maintained.
"As fresh as live food"
Insist on "Blue Daily"
Price 3/- per tin

From
HILLSIDE AQUATICS
44 Woodberry Way, London, N.12

Importers of Tropical Fish for Wholesalers. Members of The Pet Trade Association

Author of Exotic Fishkeeping

MARSHALL'S AQUARIA
26 WESTBURY LANE, BUCKHURST HILL, ESSEX
Telephone: BU/Ckhurst 4708
It is quite easy to get to Buckhurst Hill. By tube trains on the Central Line thirty-five minutes from the West End, and we are three minutes from Buckhurst Hill station. Or by bus routes 28, 38a, 167 to Buckhurst Stag, five minutes walk from there. The Hatchery is closed all day every Tuesday. You can visit on all other days including weekends.
Over 130 different species of fish for sale. Fifty varieties of plants available, collected from our hundreds of tanks for each order and sent fresh to you, they cannot fail to grow.
We sell, buy, or exchange fish of any kind. We also purchase second-hand tanks or complete "set-ups".

WE NOW OFFER
From our extensive list of plants we offer the following post free.

- Twisted Vallis [- Per Doz. 5/-] Indian Fern - Each 2/6
- Sagittaria - - 5/-
- Cabomba - - 6/6
- Hygrophila - - 6/6
- Ludwigia - - 6/6
- Java Moss - - 6/6
- Water Hyacinth

WE GUARANTEE
1. That here you will see a bigger and better display of Exotic Fish than anywhere else in the British Isles, and we do not enter the Zoo's. The test is to ask anyone who has been here.
2. That our Fish food is the finest obtainable and that it contains a very high proportion of the best liver and young bullhead's heart. Set aside from here so that it is in perfect condition and ensures that it is not adulterated in any way.
3. That our fish food does not give fish a fishy taste. Try it and you will see for yourself. N.O.F.F. (Nature's Own Fish Food) is the best.
4. That we sell fish and plants of fifty different varieties are the very best obtainable, and that our 10- band of 30 plants, including Water Lettuce, and the 11 band of all plants including Spatterdock, Ulvaceae, Ulvaceae, Ulvaceae, Water Lettuce and Libes are all post free and the best on offer.
5. That everything we sell is the best on offer. We only sell the best for the Aquarium in the way of equipment and post free. Our offer of a Thermometer, Heater and Thermometer at 2/- post paid is still open.

WHOLESALE PLANTS S.A.E. FOR LIST
We are now selling fish by Rail, Carriage and Telegram 12/-, Minimum orders £3. Please send S.A.E. for lists.

PLEASE NOTE
The books written by Thos. H. Marshall, "Breeding the Egyptians", "Breeding the Labyrinth", "Breeding the Climbers", "Breeding the South American Plants", "Breeding the South American Plants and Scape", are all available from here at 6/- per volume, post free, or a complete set for 42/- post paid.

We are always prepared to give advice on all phases of Fishkeeping and typical breeding tanks set up for many different species of fish can be seen in our Hatchery. At the moment we can offer Fancy Goldfish, including large and small Callio Vedillas. A stamped addressed envelope must accompany all enquiries, including those for our lists and answers that are required to questions.

Forty years experience at your service. We have been breeding fish since 1920

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FOR THE BEST FISH - FOOD
McLYNN'S
FISH-FOOD
THE FOOD
IN THE PLASTIC BOX
1/6, 2/6, 5/-, 6/6 & 17/6
THE DIET FISH PREFER
CONTAINS EVERY
ESSENTIAL INGREDIENT
WILL NOT FOUL THE WATER

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"ALL ABOUT
TROPICAL FISH"
by D. McNERNY OF
McLYNN'S AQUARIUM
75/- Postage 2/6

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McLYNN'S
AQUARIUM
VISITORS WELCOME
BY APPOINTMENT
11 a.m.—5 p.m. CLOSED
ALL DAY WEDNESDAY
BUY DIRECT FROM
THE BREEDER
ALL STOCK FREE FROM DISEASE
SOLD UNDER A WEEK'S
GUARANTEE
S.A.E. FOR RETAIL LIST,

From your Pet Shop or direct from:
McLYNN'S AQUARIUM
EHURST, Nr. CRANLEIGH, SURREY
Telephone: EHURST 446

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HYKRO: Natura for all Fish 8d. HYKRO: Coldwater Fish Food 1/- ½ lb; Pack 2/-. Also used for Larger Tropicals. HYKRO: Shrimpmeal 10½d. Good for all Fish but especially for Rearing Fry of all kinds. New Fish Foods appear on the market almost daily but Hykro Foods have stood the test of time 25 years, and are used extensively all over the world.

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IT'S HYKRO. Reasonable in price and absolutely unbeatable.

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The firms listed are wholesalers or retailers or both in fishes, tanks, plants, appliances and accessories, reptiles and amphibia. Abbreviations: W.—Wholesale only. R.—Retail only. WR.—Wholesale and Retail. C.—Coldwater. T.—Tropical. P.—Plants. AA.—Appliances and accessories. R & A.—Reptiles and Amphibia.

E.C.D.—Early closing day.

BERKSHIRE

The Reading Aquarist
64, King's Road, Reading
Telephone: Reading 53632
E.C.D. Wednesday. R. C.T.P.A.A.

BUCKINGHAMSHIRE

Grange Pet Stores
Well Street, Buckingham
Telephone: Buckingham 3216
Open every day. R. C.T.P.A.A. R & A.

CHESHIRE

Grassby, Joe, F.R.H.S.
"The Glen" Fisheries, Mobberley, Nr. Knutsford
Tel.: Mobberley 3272 W. C.T.P.A.A. R & A.

DEVON

Plymouth Tropicals
127, North Road, Plymouth
Telephone: Plymouth 62663
Closed Wednesday. R. C.T.P.A.A.

DURHAM

The Fish Bowl
Burdon Road, Sunderland
Telephone: Sunderland 71026
E.C.D. Wednesday (All day). R. C.T.P.A.A. R & A.

Metcalf, G. R.
187, Northgate (near Minories Garage)
(On main A.1 road) Darlington
Telephone: Darlington 9991
E.C.D. Wednesday. R. C.T.P.A.A. R & A.

Powell, M.C.
The River Fry
Caypath, Durham City
Telephone: Durham 2108
E.C.D. Wednesday. R. C.T.P.A.A. R & A.

ESSEX

Goodmayes Aquarium
Shaftesbury Parade, High Road, Chadwell Heath
Telephone: Goodmayes 2594
E.C.D. Thursday. R. C.T.P.A.A.

Skilton, C. J., Aquarist
"Ridgeway", 139, Galleywood Road, Chelmsford
Telephone: Chelmsford 56878
E.C.D. Saturday. W. C.T.P.A.A.

GLOUCESTERSHIRE

Patricia Precece (Prop. Mr. B. R. James)
10, Suffolk Parade, Cheltenham
Telephone: Cheltenham 24949
E.C.D. Wednesday. R. C.T.P.A.A. R & A.

HAMPSHIRE

Arundel Aviaries & Fisheries
241/243, Arundel Street, Portsmouth
Telephone: Portsmouth 20047
E.C.D. Wednesday. R. C.T.P.A.A. R & A.

Bridgemary Pet Stores
56, Greengate Avenue, Gosport
Telephone: Fareham 4781
E.C.D. Wednesday. Open Sundays 10 a.m.—12-30 p.m. R. C.T.P.A.A.

Wingate Zoological Supplies
7, Market Street, Winchester
Telephone: Winchester 2406

HERTFORDSHIRE

Cora, L. & Sons
Water End, Hemel Hempstead
Telephone: Water End 44
E.C.D. Saturday. W. C.P. R & A.

KENTS

Kingsfisheries Aquarium
138, Croesydon Road, Beckenham
Telephone: Beckenham 3716
E.C.D. Wednesday (All day). R. C.T.P.A.A.

Medway Aquariums
314, Canterbury Street, Gillingham
Telephone: Gillingham 52158
E.C.D. Wednesday. R. C.T.P.A.A.

Sherwood Pet Stores
(Proprietors, Fairbairns Aquaria, Ltd.),
222, Sherwood Park Avenue, Sidcup
Telephone: Bexley Heath 7217

LANCASTHIRE

Hornby's
Trafford Bar, Old Trafford,
Manchester, 16
Telephone: Trafford Park 2989
E.C.D. Wednesday. R. C.T.P.A.A. R & A.

Liverpool Aquaria Company
23, Sir Thomas Street, Whitechapel, Liverpool, 1
Telephone: Central 4091
Closed Wednesday. R. C.T.P.A.A. R & A.

LONDON (East)

Wade Aquatics
333, High Street North,
Manor Park, E.12
Telephone: Grangewood 6333

LONDON (North)

Philip Castang Ltd.
73, 91, 93, Roversend Hill,
Hampstead, N.W.3
Telephone: Primrose 1842 and 9452
E.C.D. Saturday. W. T.P.A.A. R & A.

Gould, K. T.
30, Hewett Avenue,
Wood Green, N.22
Telephone: Bowes Park 8786
Eveings and Weekends only. R. T.P.A.A.
LONDON (South)
Fairbairns Aquaria, Ltd.
15, Well Hall Parade, Etham, S.E.9
Telephone: Etham 6899

The Jaynor Organisation
(James North (London) Ltd.)
316, Lee High Road, Lewisham, S.E.13
Telephone: Lee Green 3577

"Our Corner"
310, Lee High Road, Lewisham, S.E.13
E.C.D. All day Thursday. R. C.T.P.A.A.

Petfish
554, Garratt Lane, S.W.17
Telephone: Lakeside 2805
Closed Wednesday. R. C.T.P.A.A. R.A.

South Western Aquarists
2, Glenburnie Road, Trinity Road,
Upper Tooting, S.W.17
Telephone: Balham 7334
E.C.D. Wednesday. WR. C.T.P.A.A. R.A.

Tachbrook Tropicaled Ltd.
244, Vauxhall Bridge Road, Victoria, S.W.1
Telephone: Victoria 5179
(Open all week except Sundays).
WR. C.T.P.A.A. R.A.

LONDON (West)
Aquapets
17, Leiland Road.
West Ealing, W.13
Telephone: Ealing 2748

Owen Reid's, Aquarium Dept.
12, Spring Bridge Road, Ealing Broadway, W.5
Telephone: Ealing 3259
E.C.D. Wednesday. WR. C.T.P.A.A. R.A.

NORTHAMPTONSHIRE
The Aquarium
192, Wellingborough Road,
Northampton
Telephone: Northampton 34610
E.C.D. Thursday. R. C.T.P.A.A.

The Pet Shop
120, Kettering Road,
Northampton
Telephone: Northampton 38841
E.C.D. Thursday. R.C.T.P.A.A.

OXFORDSHIRE
The Goldfish Bowl
9, East Avenue, Cowley Road,
Oxford
Telephone: Oxford 41825

Walsall & Wolverhampton Aquatics
46, Stafford Street, Walsall and
147, Horsley Fields, Wolverhampton
Telephone: Walsall 21783 and Wolverhampton 24147

SURREY
Aquapets
1, Grand Parade,
Tolworth
Telephone: Elmbridge 0678

Thameside Tropicals and The Pet Shop
Brassey House, New Zealand Avenue,
Walton-on-Thames
Telephone: Walton 24076 R. C.T.P.A.A. R.A.

SUSSSEX
Dowding, Conrad A.
1, St. John's Terrace,
Lewes
Telephone: Lewes 3970

PRESTON AQUARIUM
44, Beaconsfield Road, Brighton
Telephone: Brighton 681602
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