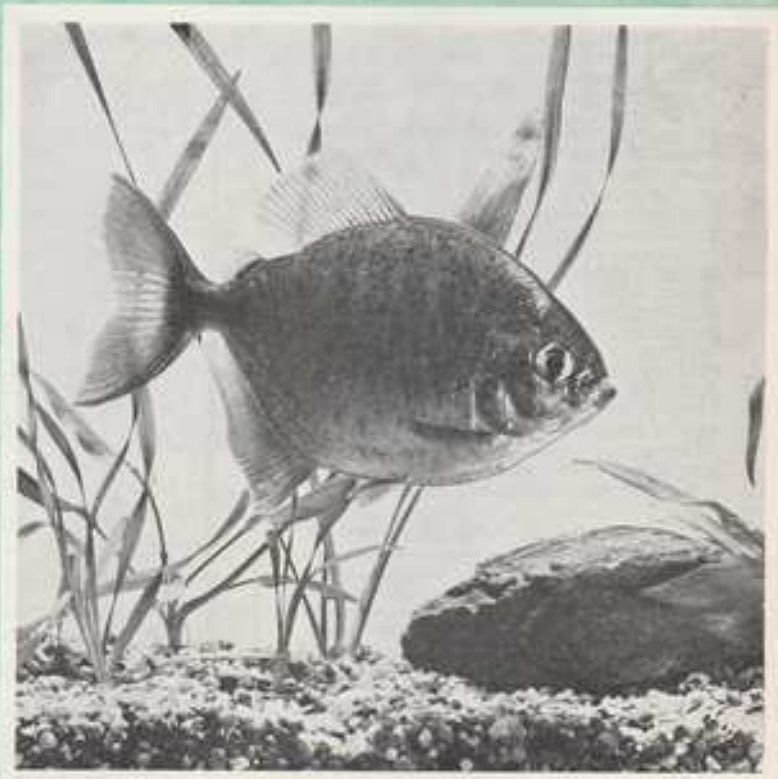


The Aquarist

and Pondkeeper

DECEMBER 1965



MONTHLY
Vol. XXX No. 9

TWO SHILLINGS AND SIXPENCE

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For Complete Tropical and Coldwater
Aquaria also Tropical Marine
100 Varieties of fish usually in stock on view
in 76 polished stainless steel aquariums

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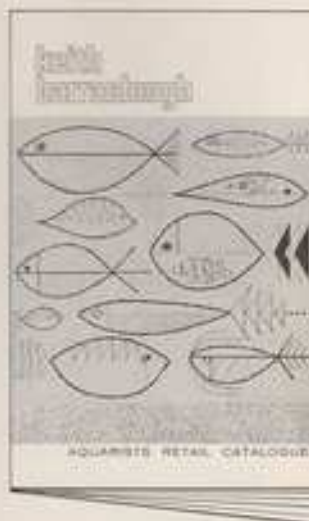
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HAPPY CHRISTMAS
AND A
BRIGHT NEW YEAR

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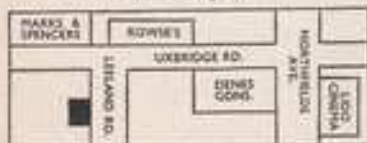
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Aquarium Vacuum Cleaner .. 60/6
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BOW-FRONTED AQUARIUM
 48 x 10 x 15 .. 236 10 0
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 Sagittaria .. from 6d. each
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 Ludwigia .. 6d. +
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 Cryptocoryne .. 2/- & 3/-
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By post, add 1/6d. Minimum 7/6d.
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Petromochonus Kribia .. 7/6 & 10/- each
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 STOCK SIZES**

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12 x 6 x 6 .. 16/6 24 x 12 x 12 .. 65/-
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UNDER COMPLETE NEW OWNERSHIP

26 Westbury Lane, Buckhurst Hill, Essex

Phone: BUC 4708

for a wide selection of good quality fish and plants

We have a few good quality fancy goldfish. These being
LIONHEADS 2" BLUE ORANDA'S 2" LARGE ORANDA'S 5" to 6" BEAUTIFUL FISH
Open every day (Including Sunday) 10 a.m. to 6 p.m.

PLANTS IN STOCK

Aponogeton crispin .. 3/-	Sagittaria Natan .. 6d.	Crypt. Balantia .. 2/6
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Amazon Chain Sword .. 2/-	Elodia Densa .. 4d.	.. Hartmannia .. 2/6
Cabomba .. 6d.	Hygrophila .. 6d.	Bamusa Plant .. 4/6
Ludwigia .. 6d.	Twisted Vallis .. 6d.	Broad Leaf Sword .. 5/6
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Cape Fear Spatterdock .. 6/6	Wistaria .. 2/-	Water Orchid .. 4/6

Special Offers. Post Only. Post Paid

31 Plants for 10/-

12 Sag Natan
6 Twisted Vallis
6 Cabomba
6 Hygrophila
1 Aponogeton

40 Plants for 20/-

12 Sag Natan
6 Twisted Vallis
5 Cabomba
5 Hygrophila
5 Myriophyllum
5 Elodia Densa
1 Cryptocoryne
1 Cape Fear Spatterdock

50 Plants for 30/-

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12 Twisted Vallis
6 Cabomba
6 Hygrophila
6 Myriophyllum
5 Ludwigia
1 Aponogeton
1 Cryptocoryne
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Breeding the labyrinths, Breeding the egglayers, Breeding the livebearers, Breeding
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SEE OVERLEAF FOR FURTHER INFORMATION

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Dwarf Lily *Cryptocoryne*
Wassara etc. £1

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12 *Myriophyllum*
3 *Micro Sagittaria*
4 *Ludwigia*
4 *Elodea Densa* £1

No. 3 12 *Vallisneria*
6 *Myriophyllum*
6 *Ludwigia*
6 *Elodea Densa*
6 *Bacopa*
1 Amazon Chain Sword
1 Persian Hair Grass £1

No. 4 1 *Nymphaea* *stellata*
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1 *Aponogonon*
1 *Wassara*
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1 *Cryptocoryne*
1 Indian Fern
1 Persian Hair Grass £1

No. 5 6 *Vallisneria*
6 *Myriophyllum*
6 *Hygrophila*
6 *Elodea Densa* 10/-

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1 Persian Clover
6 *Micro Sagittaria*
6 *Bacopa* 10/-

No. 7 5 *Vallisneria*
5 *Ludwigia* 10/-

No. 8 5 *Sagittaria*
5 *Hygrophila* 10/-

No. 9 6 *Vallisneria*
6 *Hygrophila*
6 *Ludwigia* 10/-

No. 10 3 Water *Wassara*
6 *Micro Sagittaria*
6 *Bacopa* 10/-

No. 11 12 *Elodea*
9 *Vallisneria* 10/-

No. 12 1 Clover
2 Chain Swords
6 *Bacopa* 10/-

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1 Persian *Risala*
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Aquarium—Value 30/- £1

No. 16 6 *Vallisneria*
6 *Elodea Densa*
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No. 17 Giant Amazon Sword Plants
6-8 inches 7/6

No. 18 Water Lilies
Very beautiful plants
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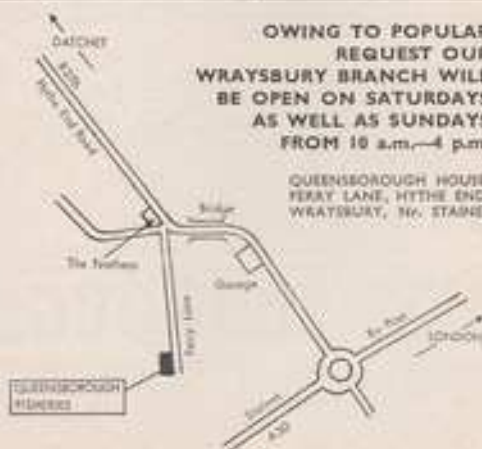
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6-8 inches Floating Plant 7/6

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2 *Aponogonon Crispus* 10/-

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Daphnia 2/-
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White worms (Post Free) 3/-
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REQUEST OUR
WRAYSBURY BRANCH WILL
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AS WELL AS SUNDAYS
FROM 10 a.m.—4 p.m.

QUEENSBOROUGH HOUSE,
FERRY LANE, HYTHE END,
WRAYSBURY, SW. STAMES



Special News

See Page vii



We are specialists in aquarium installations. All sizes and styles to customer's own specifications carried out. We have many designs set up in our showrooms. Why not call and let us quote.

VISIT OUR WRAYSBURY BRANCH ON SATURDAYS & SUNDAYS 10 a.m. to 4 p.m.

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36in. x 12in. x 15in. bow-fronted aquarium with wrought iron bookcase stand £19/10/- complete.

48in. x 12in. x 15in.—29 gu.

Ferry bronze, black & gold, and cream. Also plain stands

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Springfield Int./Ext. ... 25/-
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"Popular" with neon indicator ... 12s
Bass (with Neon) ... 21/-
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Memory ... each 6s
Gem ... 6s
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Spirit Blue Gem ... 5s
"Ex-Ex" Dummy ... 6s

FILTERS

"Windmill" Plastic ... each 19s
"Windmill" Biological Aquarium Filter 12in. 15/-
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"Clear King" Outside Filter ... 22s
Bottom Filter ... 6s
Ornamental Rock Filter ... 17s
Ultraclear ... 3s
Gro-Well Bubble-up ... 35/-

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Mossman ... each 21/-
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Star ... 26/-
Kerr ... 28/-
Zoochem Total ... 75/-
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Hy-Lo "A" ... 130/-
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Liquin ... 1/6
Diamoxone ... 2s
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Com ... 1/6
Sea Salts ... 1/6

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Bird Away ... 40s

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Nymphaea ... 1/-
Ranunculus ... 1/-
Sagittaria ... 1/-
Falsaria ... 1/-
Lobelia ... 1/-
Hydrocotyle ... 1/-
Cryptocoryne ... 2/-
"Willow" ... 2s and 5s
"Cordula" ... 2s and 5s
"Najas" ... 2s
"Giant" ... 2s
"Glass" ... 2s
"Amazon" ... 2s
"Duckweed" ... 2s
"Rivularia" ... 2s

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Exotic Flakes ... 1/6
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Britannia ... 1/6 and 2s
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Dried Daphnia ... 6d
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7 kinds of food ... 4s
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(Dry food) ... 1/3
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Pressed Steel Angle Iron
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Founded in 1924 as "The Amateur Aquarist"



THE BUTTS, HALF ACRE, BRENTFORD,
MIDDLESEX
Telephone: ISLeworth 6221

PUBLISHED MONTHLY

SUBSCRIPTION RATES

The Aquarist will be sent post free for one year to any address for £1 15s. 0d. Half-yearly 17s. 6d. Canada, U.S.A. \$5.00 yearly; \$2.50 half-yearly.

QUERIES

Postal replies are made to all specialised queries accompanied by a stamped, addressed envelope. This privilege is afforded only to registered readers and direct subscribers. Subscription forms can be obtained on application. In all cases letters should be addressed to the Editor.

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VOL. XXX No. 9

1965

Synodontis alberti

by JACK HEMS



THIS singularly attractive and peaceful catfish, a native of the Stanley Pool area of the Congo, was first made available to tropical aquarists in 1954, and is not as widely known as it should be. It belongs to a fairly large genus of African fishes of the family Mochokidae, a few of which habitually, or almost habitually, swim around with the belly upwards. On account of this most unusual habit, they are popularly referred to as upside-down catfishes. The subject of this short note, however, swims in a perfectly normal manner.

Externally the most distinctive features of *S. alberti* are a heavily built body, broader and deeper anteriorly than posteriorly, the absence of scales, six long barbels at the mouth, a tall dorsal fin supported by a strong fore spine, a short-based anal fin, and a long-based adipose fin. The colour is a charming soft lilac to lavender grey, lightening somewhat on the underparts. As a rule, not fewer than nine bold black spots adorn the sides. Black spots are also present in the dorsal, adipose and caudal fins. The lustrous black eyes are rimmed with gold tinged with silver, or perhaps it is the other way around.

A young specimen—fully-grown the species attains just over 6 in. in length, and at this size needs a tank to itself.

Please turn to page 156

Metamorphic

by H. J. VOSPER

(Photographs by the author)



The writer, photographed on a caving and geological week-end in South Wales spent by members of the South London Field Studies Society

IN the two preceding articles were discussed the igneous rocks and the formations derived therefrom by mechanical breakdown, together with materials occasioned by living organisms or their activities. We turn now to the third great division into which rocks may be separated and also consider matters relating to the use and understanding of rocks.

Metamorphic rocks are the substances which have been changed from their original form by such agencies as heat, pressure, torsion and chemical action. The original constituents may be crushed, melted, crystallised, re-crystallised, dissolved, re-cemented or otherwise affected. They may be changed into entirely new minerals, vastly different from the earlier varieties.

Metamorphism can occur in igneous, sedimentary or previously metamorphosed rocks. In the first group the resultant materials are usually somewhat banded in structure; in the second group the subsequent rocks are crystalline; in the final series the effects of extreme metamorphism cannot be readily described except perhaps to note that the results are usually unlike those of the two former instances.

Gneiss (pron. "nice"). Since granite is a common rock it is not unnatural to find that metamorphic granite is also a common substance, now termed gneiss—although, to confuse the amateur, sediments may also form gneisses. These rocks are usually light in colour, with the distinctly banded condition mentioned above but which, in aquarist-size specimens, may be of such dimensions as to be unnoticeable. The bands are due to the fact that, in effect, the constituents have been re-aligned into crystalline grains of a mainly light and dark configuration. It is often difficult to distinguish between gneiss and schists.

Schist. Almost as common as gneiss and in some areas even more plentiful, schist exhibits minerals that have

been re-grouped into flaky layers, the schistose texture of distinctive character. Possibly the most common member of the group is mica schist, so called owing to the high percentage of mica present. Feldspar is virtually absent. In mica schist the mineral has its plates arranged in parallel layers and naturally this form can be determined by the presence of flakes of mica, which have a silvery sheen. It will cleave fairly readily across the mica layer, the result being that the surface sparkles brilliantly. The colour depends upon the percentage of mica present and upon whether it is muscovite or biotite, being therefore light grey to almost black.

Other schists are also classified according to the nature of their contents, hence hornblende schist, chlorite schist and so on. Hornblende schist, usually dark green to black, may be variously grained and may be somewhat lacking in the typical schistose structure, with the result that it often looks like a simple massive rock. It is a heavy material and strongly resists scratching by means of a knife. Chlorite schist, on the other hand, is so soft as to be scratched easily by this means.

Talc schist has a pearly lustre and a greasy feel and scratches easily with the finger nail.

Well-weathered mica schist or 'massive' hornblende schist, briskly scrubbed with a wire brush, have been used successfully in aquaria.



Biotite gneiss (Sutherland), slightly enlarged. A thin-banded gneiss material in which the banding is caused by black mica (biotite)

Rocks

Quartzite. Mechanical sandstones, under most processes of metamorphism, can produce a rock which although unaltered in composition nevertheless has had its state changed, for the constituents melt and are re-crystallised into a hard homogeneous rock, which, in the silica sandstones, is termed quartzite. The sandstone thus loses its typical texture and instead acquires a pseudo-greasy feel, while at the same time it becomes very hard and compact. The colour of pure quartzite is white but impurities impart such tints as brown, grey, red, pink or even green. The hardness of this rock is such that it often results in cistellations in highland landscapes while a quartzite capping on high mountains provides the underlying rock with considerable protection.

Slate. The shales metamorphose into a generally dense rock, which, unlike the original, is reluctant to split along the bedding planes but instead cleaves at a sharp angle to, or directly across, the true stratification—the typical and well-known slaty cleavage. In colour the slates vary considerably and can be grey or brown, black, red, green or yellow.

Marble. This is a limestone in which the calcite has been converted into a crystalline variety. The marbles are typically white in colour but the presence of impurities such as iron, chlorite and graphite (almost pure carbon) will show up in veining and graining. The general economic use for marbles is as a decorative stone but several simple limestones are also termed "marbles" owing to their very decorative nature and the fact that they will take a polish.

Marble, like other calcite materials, reacts to acid tests but will also break down more readily in such dilute acids as will hardly affect impure or more dense materials.

Serpentine. This results from certain rocks (i.e. magnesian limestone) being subjected to extreme or repeated metamorphic factors. It is mainly soft and often

splinters readily, although some breaks may show an appearance very like that provided by water erosion. Flat surfaces often have a greasy texture. In colour the serpentines are of various shades of green but there are also red and yellow veins, mottlings and masses and white veins are not unknown. A fibrous variety (chrysotile) is important economically and is better known as asbestos.

Perhaps the best-known deposit of "Serpentine marble" is that exposed at Lizard Head in Cornwall, where the manufacture of small ornaments and bowls is a thriving local industry, for the rock is easily cut and polished by sandstone grinders.

Sources of Metamorphic Rocks

Mainly, but not entirely, schistoid:

- Northern Scotland (Sutherland: Serpentine)
- N. Central Scotland (Ayrshire: Serpentine)
- Anglesey
- Cornwall (i.e. Serpentine)

Typical gneissose rocks:

- N.W. Scotland
- Anglesey

Quartzite:

- Sutherland
- Ross and Cromarty
- Skye and Jura
- Argyle
- Anglesey (Holyhead)

Observations on Calcite

Calcific rocks (limestones) have long been a matter of controversy among aquarists, but their determination can at least be settled easily—they can, virtually always, be specified by the application of weak acids such as vinegar or lemon acid, by far the best and most certain, dilute hydrochloric acid. Any chemist will make up a small supply at a cost of a shilling or two and the acid should be carried in a well-protected dropper bottle, preferably of soft plastic to avoid possible breakage. If a drop or two of the acid is applied to the rock in question then the calcite will effervesce, giving off carbon dioxide.

The next point to consider is whether such a rock is likely to affect adversely any tank into which it is placed.



Schistoid rock (Wester Ross), slightly enlarged. After scrubbing with a wire brush some of the loose surface materials have been lost. There is a minor milky-quartz intrusion.



Serpentine (Cornwall), three-quarters natural size. Mottled in light and dark green, the specimen's texture is such that it splinters readily. The serpentine lighthouse has been turned and polished.



Horizontal striae (Dorsetshire) of alternating soft shaly clay and harder limestone layers. These cliffs at Lyme Regis provide a classic example of horizontal striae.

Very slightly acid water, as in aquaria, will possibly take up about 400 p.p.m. of calcium carbonate in due course; it is this factor that results in the origination of caves in limestone rocks. However, no reliable figures are available which might be applied to average use in aquaria and if one considers the amount of water replacement that may occur after siphoning off, the topping-up necessary owing to evaporation and so on, then it is clear that the conditions are so variable as to prevent the establishment of any real criterion. If a calcitic rock breaks down readily and rapidly then it will be dangerous in aquaria (a category into which chalk can be placed), but at the same time it must be stressed that the harder limestones do not act in this way and are perfectly suitable as decorative rocks; indeed they have been so used in aquaria for many years. This is simply because they do not cause trouble, are among the most commonly and abundantly available and their decorative nature is often outstanding. Westmorland, Devon Black, Cheddar Red, Mendip—these are but a few of the trade names given to decorative limestones which frequently are found in use by aquarists. Serpentine is also used but, in view of the several variations in kind and texture, the writer is not inclined to recommend it for general use.

Less interesting ornamentally are the hard oolitic limestones of South Wales, but they are perfectly safe in aquaria. These Carboniferous limestones are greyish but exhibit streaks and patterns due to the presence of fossil shells (mainly *Brachiopoda*) composed of a dense, whitish calcite.

Note that the acid test can be applied to a number of

rocks, visually simple sandstones, with positive results—the material being a sandy-limestone or a limy-sandstone, whichever one prefers! With some rocks having a texture that is sandy (and this includes some oolites) care must be taken when examining the result of an acid test because the texture may hide the effervescence. The writer used a sandy limestone for very long periods without any noticeable effect, even though the structure was definitely soft.

Not that it should be thought that only calcitic material may cause trouble in aquaria, for there are numerous toxic elements. Since only chemical analysis will normally determine their presence or exact character we should return, once again, to the comment that soft rocks are dangerous.

If a piece of rock is placed in slightly acid water, or perhaps boiled in such a medium, with pH and hardness of the water tested before and afterwards, then the results may provide much useful information about the specimen's value in a tank. A control test should be run as well, i.e. to undertake the same process in the same manner, with the same container, with water from the same source but without any rock added, so that a basis can be obtained against which comparisons may be made. It might be found that even if the forementioned factors are unchanged nevertheless some aspect of the rock's physical appearance can have altered and this would need to be regarded with considerable suspicion.

Locating Sources

For those wishing to collect their own decorative rocks a little study beforehand will be useful and for this one can refer to the geological maps ("Solid" edition) produced by H.M. Geological Survey, which are available for reference in some libraries and museums or can be purchased from the Survey museum in South Kensington, through Ordnance Survey agents or ordered from larger booksellers. Probably the most suitable are the 25 miles to the inch (at 6s. each) or the 4 miles: 1-inch (at 9s. each). The legends thereof show the presence of such rocks useful to aquarists as limestones, old red sandstone, Torridonian sandstones and conglomerates, millstone grit, basalt, slate, volcanic tuff etc. The "Drift" editions of these maps show the superficial coverings of the earth.

From these same sources can be purchased Regional Handbooks, each of which covers a specific part of the country. These Handbooks (priced 6s. each) not only describe the rocks of the area but also offer other information relating to geological features and so on.

"Limestones", a map published by the Ordnance Survey, defines this group of rocks and quotes their economic uses, being coloured according to the particular geological periods of the rocks concerned. As a general guide, it may be best to use rocks not younger than the Permian (i.e. Carboniferous, Devonian, Silurian, Ordovician). Note that geological tables, on this map and elsewhere, have the youngest periods at the top.

Those limestones which are used for road-stone, building stone and similar purposes might be preferred since this generally indicates one of the harder materials.

Collecting Specimens

Mine and quarry tips, road cuttings, exposed masses on the side of hills and mountains, scree slopes, the beds and banks of streams, the seashore—these may be considered the main sources of supply. Well-shaped rocks of suitable size are fairly rare in Nature, especially if the rock concerned is of homogeneous structure. Erosion of boulders by running water usually results in a rounded form, while rocks which will delight the eye of the aquarist will be found only in those places where the erosive power of water is applied to stationary bedrock or material which

is heterogeneous, such as conjoined strata of differing textures, as may be found in junction beds between series of rocks. By way of illustration, appropriate examples can be found in streams to the south of the Brecon Beacons in South Wales, where junctions occur between the Devonian sandstones and the Carboniferous groups.

The careful use of the hammer and chisel, files, grinders and sand-paper can often produce the results that Nature fails to supply. Incidentally, the water-eroded or dissolved appearance of some limestones is often due to atmospheric weathering or to long resting in a phreatic zone (below the water table). See "pounding", below.

Choice of Specimens

It will be found to be a useful exercise to mark out on the ground a rough oblong approaching the size of the tank for which the rocks are destined, placing the pieces in position to obtain some guidance to what style, how many and how large the selected specimens should be. Many rocks can be broken to suitable size by means of hammer and chisel, geological hammer and so on, it being sometimes necessary to chip away a line of breakage beforehand. Before working on the selected fragments it would be wise to try out on another sample for this will provide a clue about how the rock may break and it will also show whether the material will "bruise" easily. If it does bruise readily then it will be necessary to protect the specimen by wrapping it in rag or newspaper; this latter precaution can be of value during the journey home since subsequent bruising might spoil the rock before it actually reaches a tank.

As to whether sharp edges on rockwork are apt to damage fishes living in the tank, the writer's only comment on this is to ask whether the reader has, personally, ever had a fish damage itself by reason of this particular factor. In such cases perhaps it would be better to leave out sharp edges, removing them from the rock concerned by gently pounding



Contorted schistoid rock (Wester Ross), one-eighth natural size. Fleky layers of biotite provide a clearly booled structure resulting from contortions of this metamorphic rock.

with a hammer. It can be noted that some rocks can be given an eroded appearance by this "pounding" method, even if they will not permit of fashioning by any other method.

When striking rocks remember to provide some protection for the eyes, even if only to close the eyes at the moment of impact or to gauge distance while peering between outstretched fingers.

Attention should be paid to the manner in which a rock changes colour when under water, the effect usually being considerably darker than when it is dry. It would be a wearisome business, for instance, to carry rocks home from Scotland to the south of England only to find that the shades of colour virtually disappeared when the specimens were placed in a tank.

Gravel

Since the effect of running water is to remove gravel from the more massive rock from which it is derived (and the smaller the pieces of gravel then the further will they be transported) it is not surprising that fragments derived from the same source as aquaria-size boulders may well have been carried several miles distant. It is often necessary to move some interval downstream when seeking gravel exactly like that of the source rock, but one may find such material beneath the surface of dry meanders and bays.

At back eddies one may find ready-graded pebbles and the same may be found just on the down-stream side of large boulders at the sides of streams, having been deposited there during times of flood by water which lost its speed in swirling round the obstruction. In some cases the grading is remarkable in its perfection, but these spots are comparatively rare and depend upon a variety of conditions such as the kind of material involved, the situation of the larger boulders, general speed of the stream, quantity of water during flood and so on. If graded pebbles are found then separation by means of individual plastic bags, during transportation, will be an advantage.

Fossil Wood

I have often been asked where fossil wood can be obtained and the answer might well be "In the ground". There are large quantities about, in various places, but this material



A geologist stands beside two fossil tree trunks, examples of many found during a search for fossils in north Kent.

is really of more use and scientific value to palaeontologists than to any other group. Some sources of fossil wood are strictly protected by national or local organisations, but there are others where, if randomly and abundantly removed, the loss might well spoil the pleasure and interests of the sites as far as fossil collecting is concerned. It is worth noting that in many cases fossil wood remains whole only while in its original situation, but if removed therefrom it disintegrates within a few weeks unless treated with special preservatives. These latter would not stand prolonged immersion in water, nor would the fishes benefit!

Layered Rockwork

Aquarists are often advised to place rocks exhibiting a layered structure in a horizontal position. Presumably this is an arbitrary ruling laid down by and for aquarists. While it is true that bedding is horizontal in some places most sedimentary rocks have been moved out of their original position and are now tilted to a greater or lesser degree and may even be vertically upright. Indeed it would not be true to state that all sediments were originally deposited in a level position, for "swiss roll" and slump folding are commonly found as a result of deposition on a slope.

Many layered rocks are twisted and contorted into bizarre shapes similar to those resulting from volcanic or allied activity, while folds and troughs can be considered the natural order of things. Subsequent erosion results in upstanding or tilted slabs. Aspects of perspective in a tank might be displayed better, or the attention drawn to some particular feature, if strata were laid other than horizontally.

It has been pointed out that the types of rock present in the crust of the earth are many and varied and that in many cases only chemical analysis could determine whether or not a particular specimen had this, that or the other constituent. However, perhaps the condensed notes provided in this series of articles may enable the aquarist to go some distance towards identifying his present rocks or those he might acquire in the future, especially if he goes to a site suggested by the maps mentioned in order to collect his own specimens. Remember, too, that a few minutes spent in the Geological Museum in South Kensington or natural history museums elsewhere will help in problems of identification or sites. The curators of these centres are nearly always very willing to help the interested amateur.

It is not possible to list all the sources from which

information may have been gained during the course of years of desultory study, collection, examination and discussion nor even to be aware of which person or work was the origin of which particular piece of information here presented. The bibliography lists but a few of these sources, while the writer gratefully acknowledges indebtedness to all, whether directly or indirectly involved. The quoted sources from where rocks might be obtained have been derived mainly from personal notes, augmented by information culled from the Geological Survey and Museum, the staff of which organisation have always proved very helpful in matters of identification and analysis.

Especial mention should be made of the assistance provided by Mr. A. Crouse (New Cross Evening Institute) in the preparation of photographic prints from the writer's negatives.

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Synodontis alberti

continued from page 151

or no overcrowding—is quite at home in a 24 in. by 12 in. by 12 in. community tank maintained at a temperature range of 72°F (22°C) to 78°F (26°C). There, apart from its decorative value, it will perform useful service as a scavenger. This brings us to the question of food, and food for *S. alberti* means anything from whole or chopped earthworms to algae and uncrowded porridge oats. In short, it is omnivorous in the widest sense of the word.

For the rest, given proper care and attention it is a long-lived fish that is more active at or after dusk than during the hours of daylight. Up to the present writing, it has not bred in captivity, and if the species carries any external sexual distinguishing features, aquarists do not know them.



"Can I have six cartons of your delicious dried Daphnia please!"

ABOUT THE POND THIS MONTH

To Feed or not to Feed?

by A. BOARDER

WHETHER to feed goldfish in the garden pond during the winter months is often a problem for pondkeepers. It is quite certain that goldfish can go through the winter without being given any artificial food. There is always something for them to eat in most ponds although it is probably mostly vegetable matter. This, however, is quite good for them and so it is quite safe to leave the goldfish in a reasonably sized pond with no extra feeding at all. This does not mean that they will not eat if suitable food is offered. I have noticed that goldfish will eat broken worms even when there is ice on the pond. It has often been written in the past that no food whatever should be given to goldfish once the weather turns cold. Also where these fishes have not been fed they appear to have come to no harm.

Some pondkeepers have not fed their fishes at all for several years! I have known people who are surprised to be told that pond fishes should be fed at all, and who claim that their pond has been running successfully for years although they have never given any food to the goldfish at all during that time! One of the best ways of finding out how much vegetable matter can be eaten by goldfish is to keep some in a well-planted tank in the house where they can be watched. If no food is given it will be seen that after 2 days there are copious droppings coming from the fishes; it is the soft filamentous algae and slightly decaying vegetation which they have been eating.

Once the cold weather arrives the goldfish become very sluggish and remain low down in the pond. The whole metabolism of the fish slows down and in such a condition they require little if any food. These fish do not hibernate and can move about even when the pond is covered with ice quite thickly, but their movements are slowed down considerably. It can be realised from this that the fish will not need the regular feeding which they may have had during the warmer months of the year. Most goldfish will feed at a good rate whilst the temperature of the water is about 65°F (19°C). They will also feed if the temperature is up to 70°F (21°C), as long as the water has a good oxygen content. Once the temperature of the water drops to below 50°F (10°C) then the appetites decrease accordingly.

This point about the oxygen content of the water is most important when considering whether to feed during the winter or not. If the water is at all foul then the fishes are not likely to want to eat and any food given will remain to foul the water more. A very good indication for the pondkeeper of when to feed is to take notice of the actions of the fishes before any food is offered. If they appear to be active then there is no harm done if a little food is given. This does not mean that as much should be put in the pond as would have been given during the warmer months of the year. Always give a very small piece of broken worm first, then if this is taken some more can be given. It is a great mistake to give a lot of food at a time during the winter.

I find that garden worms are the safest and best foods for the goldfish during the colder months of the year. It may be thought that these cannot be procured during the

winter but the good pondkeeper will collect some worms before the frosts set in. They can be kept for a long time as long as certain precautions are taken. There are three important points to watch when attempting to keep garden worms. They must be damp, cold and dark. A large galvanised can will make a good receptacle. Do not put any earth in the can. Worms kept in earth soon die and decompose. A good depth of decaying leaves is the best medium and these should be just damp, not sodden with water. The can must be kept in a cool position and, of course, be covered to exclude the light. One of the main causes for the death of worms in tins during the summer is that they become too warm. This is not likely to happen during the winter, but a very cold place is always the best.

If you do offer small pieces of worm in the winter, watch to make sure that the fishes are eating, and always give the food in the same place. The fishes will soon learn to come to that place when hungry and any food un eaten can be seen readily. I do not advise that any other food should be given. If the pondkeeper is fortunate enough to have a good supply of white worms, they can be given, but if the fishes are of a good size it will take many white worms to make a good meal. Even a 3 inch goldfish can take about 50 white worms in its mouth at one go, if these are in a ball. I am sure that it is not worth the risk to feed with any dried foods once the temperature of the water falls below 45°F (7°C), as any food not eaten can soon upset the balance of the water.

The advice given for goldfish will also be applicable for hi-goi and other types of carp, but if there are other freshwater fishes in the pond their wants may be different from that of the goldfish. If perch, either green or golden, are in the pond it may not be necessary to feed them from the end of November to the end of February. They are a very sluggish fish during the winter and need little food. They could, of course, find something to eat if they required it either in the form of water snails or other live foods which may be present in the pond. As well as live foods they can also eat plenty of vegetation. Such fishes as pike eat very well during very cold weather but it is not likely to find any of these in the ordinary garden pond. They would soon clear out all the goldfish and smaller fishes.

Some pondkeepers have a few perch in a separate pond and very handsome they are, too. These will have to be fed for most of the year. They are very fond of garden worms and also small fishes. It may be possible to catch some sticklebacks for them. It may be thought that the spines of the sticklebacks would prevent the perch from eating them, but this is not so. I have found many of these little fishes in the stomach of a perch I had caught, also having used them as live bait.

Other coldwater fishes such as rudd and dace will also eat a little during the winter but always make sure that the fishes are active and take food readily before giving much at one time. You can be sure of this: none of the usual pond fishes as kept in garden ponds will come to any harm

Continued at foot of next page

AQUARIST'S Notebook

by P. M. FULLER

TRANSPORTATION of tropical fishes is always a very grave problem. The mortality risk incurred even in warm weather is considerable, but when it is cold, and a large number of fish have to be conveyed a lengthy distance, extreme care must be taken. One method which I have found to be successful relies for its heat on a hot-water bottle! I found that by placing the bottle on the bottom of a cardboard box, inserting an insulating layer of crumpled newspaper, and then introducing a similarly insulated goldfish globe, or large jam-jar, a regular temperature could be maintained for several hours. Since the heat rises from the base, circulation was established ensuring all the water was of the same temperature. Regulation against over-heating was supplied by a covering-cloth, placed over the whole set-up, which could be removed if the thermometer reading registered too high. This system has the added advantage of reducing the temperature adjustment time, necessary before allowing specimens into the home aquaria, and is ideal for transporting fishes by rail or car on a cold autumn or winter day.

One hates to think about it but the cold weather will be with us again before long—and there are some simple precautions that can be taken to protect specimens against increased hazard. Partial lagging of the tank by day and total lagging by night is a simple procedure which both reduces electricity costs and protects the fishes. It may most easily be accomplished by the use of cushions—see more conveniently by the under-felting used for carpets. If the latter is applied with care no aesthetic effect need be lost; all but the front panel are covered during the day, and in the evening the final piece is put in place—lagging is particularly important in areas prone to electricity cuts.

While on the subject of winter preparations an oil-lamp, or if a gas-point is available, a simple gas aquarium heater, are useful investments as stand-bys against power-failures; also don't forget the spare immersion heater for your tank. One aquarist I know once spent half the night sitting by his tank trying to keep a single aquarium at a constant heat with an electric fire—how much trouble he could have saved himself by a little forethought and a minor outlay!

Fishmongers are often a mine of information about the products they sell, full of fish fables and stories. My local fishmonger told me an interesting legend about the haddock. The two black marks on either side of the head, are said to be the finger prints of Christ, permanently visible in this species from an occasion when Christ is supposed to have handled it. I have seen many so-called traces of Christ, and heard of many more, but never before realised one was visible on one of the fishes we most commonly eat.

Near the popular tourist resort of Lugano in southern Switzerland lies the little village of Melide, locally famous for its splendid "Swiss Miniature", a magnificent collection of models of various Swiss buildings and beauty spots. Situated beneath an artificial mountain is a most attractive aquarium, well worth a visit for its own sake. Delightfully displayed in a number of bright and well-planted tanks are a wide selection of tropical fishes, and a few amphibians, individual specimens among which appear to be of a very high standard. It is always a pleasure to come across a well-kept aquarium in an unexpected place. I hear some have been installed in certain subways—in my opinion a highly commendable move!

At the time of writing reports are still coming in concerning the threat to the English salmon industry arising from the netting of fishes in migration off the coast of Greenland. Experts rightly perceive the possible dangers resulting from these mass catches, which are a very different matter from the highly regulated capture of fishes as they swim up and down the rivers to and from spawning. It should also be remembered that what is at stake is not merely the sporting pleasures of a minority—but a very important national freshwater fishing industry.

The salmon is not the only fish to migrate up our rivers, and from Christchurch in Hampshire I hear that a splendid eel harvest has been obtained this year to supply the market at Billingsgate.

Rocks for the aquarium are always a problem. Marble, quartz and similar calcium carbonate rocks (along, incidentally, with sea-shells) are highly unsuitable because of the adverse hardening effect they have on the water. Granite, however, seems to be ideal. Many pleasant shades ranging from delicate whites and pinks to dark blacks can easily be found (especially round the lochs of Scotland), making it a highly attractive stone from a decorative point of view. Coal, too, may be used to contrast with white or pale coloured fishes, and is said to possess certain algae-destroying but otherwise harmless elements. Of course, the safest decorations of all are the commercially sold glass "rocks", which have no appreciable effect on the water at all.

When visiting a bazaar in Turkey I saw water leeches for sale in milk-bottles. They were definitely not the medicinal species and for a long time I have been perplexed about the use to which they could possibly be put. Have readers any ideas on this point?

To Feed or not to Feed?

continued from the preceding page

if they are given no artificial foods during the colder months of the year. Naturally, the size of the pond, and the number of fishes in it, will influence the amount given. If a pond is well planted there is less necessity for extra feeding. Among most water plants there are likely to be found many water lice (*Aesopus*) and freshwater shrimps (*Gammarus*). In addition there may be larvae of various insects. Many worms can fall into the water and although during severe weather they are not likely to be on the move above ground, it only wants a short mild spell to bring them up to the surface and to move around during the night.

The pondkeeper must therefore use his discretion about whether to and when to feed the fishes in the pond. Take note of the condition of the water and the activity of the fishes and if any food is given see that it is not dried food and give only a little at a time.

British Aquarists' Festival 1965



Winner of the special prize for most attractive stand was Halifax A.S. with this detailed bar setting into which aquaria were incorporated

Large crowds attend the fifteenth B.A.F. at Manchester

ANOTHER very successful British Aquarists' Festival took place at Belle Vue, Manchester on 27th and 28th November. Although the weather was very cold and wireless and newspaper reports were unfavourable a vast number of people turned up to enjoy the very fine exhibition. The Saturday brought many visitors, but on Sunday the hall was quite filled for most of the time. This was in spite of the fact that the area used was bigger than ever, being about 130 yards long and 30 yards wide. Many very attractive stands had been erected by the numerous societies competing. A novel stand was in the form of a bar, complete with pumps and bottles etc. Another represented the Blackpool pier and even had a full-sized model mermaid, entangled in fishing nets. One stand took the form of a ship, another that of a row of petrol pumps and others also showed much imagination.

This type of show is so very attractive to visitors who may not be actual aquarists. But the true aquarists could find plenty of splendid specimens to interest them. Some of the tropical fishes exhibited were really impressive, many being of a large size that drew admiring comments from visitors from the south. The coldwater fishes were rather disappointing, as the fancy goldfish were lacking in numbers and in most cases in quality. Where have all the good fancy goldfish gone? The dealers' stands were



The mermaid surmounting the Blackpool and Fyde A.S. stand caught the eye of many beside the judge, who awarded the exhibit second prize



Chapelton and District A.S. took the third award in the stand competition with this fine display



Fighter Foel, Motive Mixture and Guppy Golden are the titles on the globes of the 'pumps' in this ingenious display by Tadcaster and District A.S. (fourth award)



Speaker at the F.N.A.S. Assembly during the B.A.F. was Mr. J. Kelly (pictured above, centre, on the stand of the fancy Guppy Association), who recently returned from a lecture tour in the U.S.A. Mr. Kelly's tour was by invitation and he was presented with the International Federation of Aquarium Societies publications of the year trophy whilst in America for his work on the Fancy Guppy Association Magazine. His entertaining account of his U.S.A. tour was very popular with F.N.A.S. members.

besieged by aquarists and on Sunday there were usually rows of intending purchasers four deep round most of the stands. The stand of *The Aquarist* and *Pondkeeper* displayed many useful books and many queries were answered by experts in attendance.

Visitors came from great distances and several were from Northern Ireland, Bournemouth, Swindon and Scotland. One enthusiast flew from the U.S.A., especially for the show, remained all the time it was open and flew back Sunday night.

Full results of the B.A.F. are reported on page 166

OUR EXPERTS' ANSWERS TO TROPICAL AQUARIUM QUERIES

I have had my aquarium set up for about 3 months, but I just cannot get my plants to flourish. I have been told that if I start all over again with a layer of worm-free soil under the washed grit I will soon have a lovely underwater garden. Is this true?

It is not true, except perhaps when carried out by someone who knows just how much, and what sort of soil can be introduced into a tank without causing trouble. It is safer for the beginner to use washed sand alone. In time, the various trace elements necessary for plants to flourish are dissolved out of the fishes' excreta. For even in a very well-cared-for aquarium a lot of powder-fine sediment sinks down into the compost and helps to nourish the plants. However, there is a way of ensuring better root growth than that obtained in washed sand alone, and that is by spreading a quarter-inch thick layer of well-soaked granulated peat or crumbled baled peat over the bottom. Cover this with at least 2 in. of sand. Peat will not ferment or give rise to smelly, milky-looking water. But please

note that whatever planting medium is used, plants will not grow properly unless they receive the proper quality and quantity of light.

Many queries from readers of "The Aquarist" are answered by post each month, all aspects of the fancy being covered. Not all queries and answers can be published, and a stamped self-addressed envelope should be sent so that a direct reply can be given.

The muddy shallows of a brook running through a field are red-coloured with Tubifex. Yet when I attempted to obtain some of these worms for my fish they all vanished like magic. How does one set about collecting this live food?

What you need is a scoop-shaped shovel fixed to a long handle. Plunge the shovel into the Tubifex-inhabited mud,

Lift it quickly, and turn the mud out on to a piece of fine wire gauze or fine nylon net just dipping into a bucket of water. The worms will wriggle out of the mud and collect in a ball on the bottom of the bucket. Every now and again, tip the water out and remove the worms to another container. Whatever you do remember to stir the worms around in clean water—several changes of water—before feeding them to your fish.

What easily obtainable and peaceful tropicals could I keep in a brackish water aquarium already stocked with Malinjan angel fish and sea?

Provided that you make the change from fresh to salted water in gradual stages, guppies and mollies should settle down very well in a brackish water tank.

Please tell me a quick and painless method of killing an old and very sickly fish.

Dash the fish with as much force as you can muster against a brick wall or on to a stone path. Death will be instantaneous.

The water in my terrapin tank quickly becomes green with free-swimming algae. I have been wondering whether I could use this green water to feed to fish fry. Your comments on this would be appreciated.

In our experience green water dipped out of a properly cared-for terrapin tank is perfectly safe to feed to tiny fry. We would also like to add that a terrapin tank provides ideal conditions for breeding *Daphnia*. In fact, enough "flea" can be removed from a reasonably sized terrapin tank twice or thrice a week to help out the initial live food requirements of a few score of young fry.

Please give me some information on the fish called the salmon discus.

The term 'salmon discus' is applied to all species of the genus *Epplatichthys*, which is widely distributed throughout tropical South America. Salmon discus are lively, peaceful and quite comfortable at a temperature range of 72°F (22°C) to 80°F (27°C). They will feed on anything alive or dried. But they have one failing: they have a marked aversion to being disturbed, and any sudden shock will sometimes result in their sinking to the bottom and turning over on one side. A severe shock can sometimes result in death. It follows therefore that salmon discus do not take kindly to netting, or frequent changes of their surroundings.

Would it be safe to use a perforated zinc screen to divide a large tank into two compartments: one for indolent fishes, the other for aggressive cichlids?

It would be asking for trouble to introduce a perforated zinc screen, painted or otherwise, into your tank. Zinc is highly toxic. Your best plan would be to divide the tank into two by the addition of a glass panel, cut to fit fairly closely at the sides, and held in place by rubber or wood wedges. To protect the snouts of the fishes from possible injury, it would be a wise precaution to blunt the razor-sharp edges of the glass with a few rubs of a carborundum stone.

I have a deep tank which I keep only half-filled with water. It is my intention to build up a sort of rockery along the back above the water line and furnish it with attractively marked and interestingly shaped foliage plants set in peaty pockets. What plants do you suggest? The tank receives adequate growing light.

You can hardly do better than choose from the following: *Ficus pumila*, *Tradescantia blattfeldiana*, *Scandapous aurea* and *Synponium volucrium*. The rampaging *Heliconia sibirica*—the type or the gold or silver variations—is useful for draping habitually moist rockwork with a mantle of minute leaves.



Photo: E. Gorb
The piranha when young

I would like to keep a piranha. Can these fish be bred in aquaria?

Remember that the small specimens offered by dealers can grow to 9 inches in length. Since it is at something about this size that they will breed, you must be prepared to devote large aquaria (36 in. or more) to them. Breeding would be well worth attempting for there is a good chance of success and there is much yet to be observed about the development of this fish.

Apart from fairly frequent touching up with a quick-drying enamel paint, is there any way I can prevent rust forming and flaking off the top angle bars of my aquarium?

Yes, you can obtain u-shaped plastic strip from any well-stocked dealer's shop, which can be pushed over the edges of the angle bars. As a rule, this protection will stop much, if any, rust forming for a very long time.

Can you tell me how to keep the temperature of my 24 in. by 12 in. by 12 in. aquarium from rising after the light is switched on at night? I am afraid that the difference in temperature that occurs between the upper and lower levels of the water will prove harmful to the fish.

Do not worry about this. In nature sunlight has the same effect. Some fishes enjoy basking in the extra heat that sun or electric illumination will give. It is a sudden all-over change in the temperature, or a rapid drop from the normal temperature to below 65°F (18°C) that must be guarded against.

Following the instructions outlined in a tropical fish book, I dissolved a few crystals of potassium permanganate in a cup of water and supplied this into my aquarium to try and rid it of free-swimming algae. Within an hour or two all the fish were gasping at the surface and I had my work cut out for the next hour or so draining the water off and replacing it with fresh. What was the cause of this?

The solution you emptied into your aquarium killed off the microscopic plants so rapidly that they completely upset the balance of the water. If you ever use potassium permanganate again, take care that you do not introduce too much of it into the aquarium at a time, particularly so if the water is very green and there is much sediment on the bottom.

What treatment is necessary to render lumps of coal suitable for aquarium decoration?

Apart from a good soaking and then a vigorous scrubbing to remove all loose particles of dust nothing else is needed. But in a poorly lighted tank coal seems to encourage the growth of a slimy, brownish algae. This can be remedied, of course, by another good scrubbing, and improved lighting.

Several months ago I introduced six small angel fish into a 24 in. by 12 in. by 12 in. tank untenanted by any other species.

For a while the fish grew rapidly; but now they make no progress at all. Do you think dried food with occasional feedings of Daphnia is sufficiently body-building?

To grow any of the larger cichlids to a large size they must be given plenty of meaty food such as chopped or tiny earthworms, and scraped raw or cooked lean beef or washed liver. But food alone will not produce large angel fish. What this fish needs is plenty of swimming space in clear, well-aerated water. If you remove two of the fish from the tank the other four will forge ahead.

COLDWATER FISH-KEEPING QUERIES answered by A. BOARDER

I intend to make a small cement fish pond in the garden and would like some information on procedure.

Site the pond in a position away from trees or shrubs. If on a high part of the garden it will be easier to empty if necessary and will not get drainage from the garden into it. Consolidate the base before concreting and insert many bricks, stones etc. to form a strong foundation. Use a mixture of two parts of aggregate, three parts of sharp sand to one part of cement. Tamp the concrete so that the finer material is brought to the top, as this obviates the use of a separate coating with a finer mixture. If the pond is made with sloping sides the use of slanting will be obviated. The cement needs to be 2 inches thick for a small pond and 3 inches for a large one.

I have made a pond 10 ft. by 3 ft. 6 in. and 1 ft. deep. How many comets and tench should be introduced?

Your pond is very shallow and may freeze up badly in severely cold weather. About a dozen fish of 3 inches in length will be enough, as you must allow for growth.

A friend of mine has recently lost a shubunkin and two green tench in his fibre-glass pond. They seem to have fungus on them. What is the reason for this?

The water in the pond must have been very foul for the tench to die. That is, of course, assuming they were in a healthy condition when they were obtained. Tench can live in water which would be too foul for goldfish and are usually very hardy. The water and its source should be checked to try to find the fault. Did it come through copper pipes? I was recently called to a small garden pond where the goldfish died within about 2 days after they had been introduced. I instantly spotted the trouble; a copper pipe fed almost continuous water to the pond and the house supply from which it came was also all copper. I advised a complete change of water to a pure source and there has been no trouble since. The water could also have been polluted by over-feeding; many new pondkeepers just cannot refrain from feeding their fishes every time they see a fish at the surface. The resultant decaying of the uneaten food could soon cause trouble.

I am greatly disappointed at the state of my pond. It is very thick and as the fishes move about they stir up a lot of sediment which makes it almost impossible to see them. What can I do to remedy this?

The easiest way is to introduce plenty of underwater oxygenating plants. These will soon become established in the mud, use up much of it and prevent the rest from coming up from the bottom.

My coldwater tank is not functioning well. I put some builder's sand into it and planted some water crowfoot plant in it. The water is now a greyish colour and the sand has gone black; why is this?

The sand may not have been to the liking of the plants; crowfoot is not easy to get growing quickly when it is introduced from a natural pond or river. The black sand

indicates that there is something decaying there, and it could be the dead water plants or uneaten food. Before any fishes are put into a tank it is better to see that there is a healthy growth of water plants there first. The greyish water is probably full of Infusoria which are thriving in the polluted water. Change everything and make a new start.

I am making a garden pond and would like to try some other coldwater fishes apart from goldfish. I once saw some fish which I was told were 'blue carp', but I cannot find anything about them. Can you help?

I know of no species of carp known as 'blue', but I suspect that the fishes referred to were hi-go. They grow very large and are often used in large ponds. The shubunkin is sometimes coloured blue, but would not be known as a blue carp.

Can you tell me what the weed is which grows like fine green cotton all over my plants and how to get rid of it?

The weed is blanket weed, a form of thread alga. This thrives in water where there is a deficiency of other plant life. You must pull out as much as you can by hand or by twisting a broken green stick into it. Then try to increase the amount of water plants, especially the underwater oxygenating ones. Once these grow stronger they can choke out much of the weed.

I am interested in planting ferns at the pondside and would like to know when is the right time to do this?

Ferns are usually planted just as the fronds start to unfurl, in the early spring. If you could obtain any in pots it would be possible to plant them at any time as long as they were well watered before and after planting. It would be taking a chance to try to move large established plants at any time except the spring.

Three years ago I made a concrete pond and I recently decided to increase the depth by adding about 4 inches all round. Since I have done this the water leaks away, presumably at the join of the new concrete to the old. What can I do to make it waterproof?

It is always difficult to get fresh cement to join up, or wed, in old. The best thing you can do is to scrape all round the joint with a broken file or similar instrument. Make a slight groove all round the pond with no break in the run. If you lower the water level of the pond a few inches you will be able to work without actually emptying the pond. Try to catch the old scrapings as you work to prevent too much falling into the water. Now get some fine, sharp sand and mix one part to one part of Prompt cement. Push the new mixture well into the crack, working continuously all round the pond as quickly as possible without a stop. This cement sets very quickly, so wet only a little at a time. It can set in about half an hour. After a couple of hours you can wash the fresh concrete well with a sponge so that the free lime is removed. It will then be possible to refill the pond and all should be well.

Around the Aquariums

by MIKE SHEEDY

THE Aquarium at the Bristol Zoological Gardens has proved a great success with the many thousands of visitors who visit there. Many alterations have been made from time to time and it is now a very fine attraction with a vast array of exhibits.

The tanks in the Aquarium are arranged so that they receive light from above and so that the fishes can be looked at from the side. In this way the visitors can see them at their own level. Small tanks containing tropical fishes are artificially lit and heated. The other tanks have daylight illumination.

Some seawater fishes found around the western coasts of this country can be seen in the first large tank, including the plaice whose colour can be changed to match the background.

In freshwater tanks various lake and river fishes can be seen. Various members of the carp family and fancy goldfish form the major part of the collection. A giant salamander from Japan was exhibited here for about 30 years.

Two electric eels are also exhibited. These fish, which are not true eels, come from the muddy rivers of South America (see *Around the Aquariums*, August issue of *The Aquarist*). They swim by small undulations of the long fin on the underside of the tail. The main bulk of the tail is developed into the electric organs which are modified muscles. These fish can produce a shock of several hundred volts.

I had a visit from a reader recently who had just returned from a holiday in Devon. He had paid a visit to the Paignton Zoo and spoke very well of what they had to offer. He told me he enjoys reading my notes and was looking forward to paying a visit to see the Belle Vue Aquarium, which I recently reviewed in *The Aquarist*. Readers are always welcome to call and see me.

I would like to thank the many readers and Zoological Gardens who have offered to help me out with my Exhibitions, which I am holding in the near future; it is nice to know there is so much interest in this.

The Wellington, New Zealand branch of the S.P.C.A. is strongly against keeping dolphins in captivity. Recently a petition was tabled in Parliament. The petition of Marjorie M. Hardy, of Hawke's Bay, asked that captive dolphins be returned to the sea. Dolphin pools were being set up in various parts of the country. The mammals were highly sensitive to captivity. They were considered the nearest in intelligence to human beings of any wild creature and were held in respect by the early Greeks and Romans. Three of the dolphins in the Napier pool had died, leaving only two of the original five.

However, Napier will soon be vying with Miami as the place to see trained dolphins in action. At the moment the dolphins in Napier's Marine Parade pool are learning the first of the repertoire of tricks planned for them and

although they are not yet as spectacular as their Miami cousins, trainer Mr. Alex Dobson is well satisfied with their progress.

The Cleethorpes Marine Land and Zoo will remain open all through the winter months. They have made very good progress during the past year and now visitors can see the massive tanks containing dolphins and sea-lions. There are now three dolphins and three sea-lions; other marine mammals include two common seals and two grey seals and, of course, a fine sea elephant.

The collection of tropical fish on display is to be seen at the entrance and also at the exit of the Tropical Bird House. There are many varieties on display and the fishes are exhibited in large well-planted tanks.

The Flamingo Park Zoo Aquarium has always been a great attraction with visitors since it opened a few years back and a very large collection of fishes is displayed. Another big attraction is the Reptile House. This building is constructed with an all-glass roof to encourage the growth of tropical plants, ferns and cacti. Each vivarium is furnished with natural rockeries, pools and waterfalls. Among the large collection will be found lizards, alligators, snakes from South America, including the emerald tree boa, exotic tortoises and the iguanas from South America. Here you will also find the gila monster with its close relative, the Mexican beaded lizard, the only poisonous lizard in the world.

Marsilea hirsuta

AMONG the most attractive thicket-forming plants suited to growing in a well-lighted tropical aquarium is *Marsilea hirsuta*. This plant, which in its natural state grows along the margins of still and moving fresh waters, and also covers vast areas of swampy land in Northern Australia, Queensland and N.S. Wales, sends strawberry-like runners or stolons over, or just under, the compost. At intervals along these runners rooting nodes are formed from which erect wiry stems unroll as in the manner of a fern. Before, or after, a stem has reached the surface of the water it opens out a four-lobed, hairy leaf very similar in shape to the foliage of the ordinary field clover.

To give *M. hirsuta* every encouragement, it should be planted in a gritty compost with some soaked granulated peat (and some clay or non-fibrous yellow loam if there are no bottom-grubbing fishes present) added. It can also be grown as a bog plant and cultivated in a pan of habitually moist peaty soil stood on a warmed greenhouse or fish-house staging. If placed in the former, fairly frequent overhead mist-spraying (with tepid water) or a tank of water nearby to maintain a fairly high humidity is necessary.

B. Fry

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.



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

Why Breed Fishes?

MR. A. Burch, in his article "A Criticism of Fish Breeding" (*The Aquarist*, September), begins: "The successful breeding of fish is often thought to be the ultimate goal of every aquarist". It would be more correct to say that, with few exceptions, this is the ultimate goal of every aquarist. There are many reasons which justify such a statement, and I have bred both coldwater and tropical fishes for each of the following reasons at various times.

Curiosity prompted my first attempt. This, I admit, is the least valid reason, and my curiosity was soon satisfied.

It is possible, despite what the experts tell us, to make a profit out of fish breeding. I suspect them of spreading the idea that it is a "mug's game" merely to deter prospective amateur breeders who would cut a tiny slice out of their market. Earning a living at it is strictly for the full-time breeder with well-equipped premises. On a small scale, it is possible to regain one's initial outlay on equipment and pay the electricity bill. This is profit.

Most beginners would welcome the opportunity to stock a community tank for the price of one pair of fish. This is possible, requiring only patience, membership of a local club, and cooperation. Just publicise your tank full of home-bred "swaps", and you have your community.

It is just as interesting to stock a tank from the original pair, not as a community, but as a shoal. I disagree with the critic's observation that individual fish become submerged in a shoal. They establish themselves. Many types, notably the smaller characins, are not meant to be individual fish anyway, and are seen at their best only when in shoals.

Breeding fish has an educational value, in homes as well as schools. Any aquarist's child has an early grounding in the facts of life, and this is never derived from watching the community tank!

It is accepted that all fishes look their best when ready for breeding. If you feed and condition your fish to keep them at the peak of perfection (as you should do), then why not, logically, breed them?

At shows, the most coveted awards are those for the breeders' classes. This is natural, since it is so much more of an achievement to show six well grown, perfectly matched fish that one has bred, than to buy a good fish, keep it for a month or two to comply with the regulations, and carry home the trophies.

This same sense of achievement is, without doubt, the

main reason why we amateurs do breed fish, whether they are shown or not. Admiration of one's community tank by friends and neighbours is rewarding to one's ego, and watching the tank oneself is very satisfying; but most aquarists soon feel the need to do something more objective.

This applies to all hobbies. The man who clicks his shutter, drops the film at the chemists on his way to work, and claims photography as his hobby, is either misguided or boasting!

The big disadvantage, claims the writer, is the difficulty in disposing of surplus fish. I have sold fish, though I will admit I must have been fortunate to find dealers who would accept an amateur's diseased stock! I have killed fish—only the offspring of parents which I could not prevent breeding—and though I would rather dispose of them in some other way, I did not find the emotional conflicts too disturbing. I have also exchanged fish.

On many occasions I have given fish away. This is by far the easiest way, and the gratitude earned is as satisfying a reward as the income derived from selling fish. (I must add that I consider the donation of a dozen unwanted guppies to the local hospital's tank a despicable trick.)

On reading your article again, Mr. Burch, I find myself beginning to suspect your motives in writing it: are you a professional?

R. S. HOLMES,
Limesol, Cyprus.

More British Accessories Wanted

I AM comparatively new to tropical fish-keeping, but I and fellow aquarists whom I know are sadly disillusioned about the hobby in this country. Why is it that in America and on the continent more accessories are available than here? Almost everything we sell for the aquarium is foreign.

Although I have only been fish-keeping 8 months I have over 200 fish and 14 aquaria, and have just built myself a fish house; so you see I am enthusiastic.

I have travelled all over the country to obtain fish, and I can honestly say that with exceptions the displays were to say the least very disappointing. Why don't these professional aquarists stock cichlids, and other unusual types of fishes? I saw only guppies, platys, angels, mollies and tiger barbs.

A. CHAPMAN,
Crews, Cheshire.

Aquarium Decoration

WH often hear about various methods of arranging rocks and plants to make the home aquarium more pleasing to the eye, but I wonder how many readers have thought of making the attraction on the outside of the tank. The method I refer to is to fix a piece of card to the outside of the frame of the aquarium with its inner edge cut to a wavy shape representing the mouth of a cave.

The card can be covered, as I have done, with 'brick' paper—obtainable from most hobby shops, or painted to represent rocks. This seems to give the tank more depth, and definitely more attraction. The same method can also be applied to each end glass. The idea behind fixing the card first is to cut out the light that would otherwise show through the paper and thus spoil the required effect.

A. MARRHAM,
Gorleston-on-Sea, Norfolk.

More Scope at Shows

MANY readers of your publication have expressed their disappointment and regret, in past issues, that rarely, if ever, are classes for coldwater and/or tropical marine fishes included in societies' show schedules. In an effort to find a solution to this problem, my Society, at its last Committee meeting, unanimously agreed on a proposal to provide such classes at its Fourth Annual Open Show, to be held in September, 1966.

This decision is typical of the policy of the Society, in their recognition that the minority, as well as the majority of aquarists, must be catered for. Our Society, regarded by all as the most go-ahead club in the Principality, have taken the lead in this matter. Will any other Society follow suit?

M. J. PARRY,
Show secretary,
Newport Aquarists Society.

British Killifish Association

I AM writing on behalf of the British Killifish Association, to let you know that we have had a big response to the announcement made in *The Aquarist*. I mentioned we could bank on a hundred members. We have passed this mark quite easily, and we have also members from overseas countries, Denmark, Spain, South America and India. All have proved most helpful to us.

We have also imported species that are quite new, e.g. *P. zonatus*, *Astrotendulus transilis* and *Astrotendulus niger*; we hope to have a new *Nothobranchius* species in the spring.

These species are being bred by a New Species Propagating Committee, consisting of twelve experienced breeders of roach-carps, and these will then be made available to members.

Slide shows are being made (with tape recordings) showing different species, their habitat, breeding procedure etc. These will be available to members and societies in the future. In all we look like having a very successful Association.

PAUL STOVES,
Chairman,
British Killifish Association.

Swimming Speeds

THAT the swimming speeds of fish given in Mr. Fry's article (*The Aquarist*, August) struck Mr. R. McN. Alexander as improbably high is easy to understand, but more than a quarter of a century ago Frank Lane recorded in *Chambers Journal* (November, 1938) that tunny are capable of accomplishing the journey from the coastal waters around Provence or Liguria to Sicily and Tunisia in a day or two. This, assuming that Mr. Lane's assertion is correct, is fast going. But then, the rapidity with which

certain marine species can move, even when hooked to the end of a line, is a favourite subject of discussion among those interested in game fishing. Quoting from an article published in *The Countryman of Spring*, 1943, A. G. Magri McMahon, in his highly informative *Fishlore* (Penguin Books, 1946), gives the speed of tunny as 44 m.p.h.; the blue shark 26.5 m.p.h.; pike 20.5 m.p.h.; trout 23.25 m.p.h., with the salmon a little faster; and roach and perch about half that speed. These and similar figures have been quoted in various angling magazines published over the last 20 years. As the late J. R. Norman, in his monumental *History of Fishes*, pointed out (if my memory serves me right), little research has been done in this interesting subject, and the speed of fishes is still largely speculative.

JACK HEMS,
Leicester.

For the Record



Photo:

T. Nolan

THE specimen of *Elodea densa* shown laid out in the photograph has a continuous main stem length from rooting point to growing point of 11 feet 6 inches. It has two side growths totalling 5 feet 2 inches in length. All this grew from a short cutting planted in a 24 in. by 12 in. by 15 in. aquarium kept at 75°F (24°C) and left undisturbed for about 4 months this summer. The growth formed a winding mass in the tank just below the water surface. (In the picture the dark rectangle is a strip of wood 12 inches long.)

BRITISH AQUARISTS' FESTIVAL 1965—Detailed Results

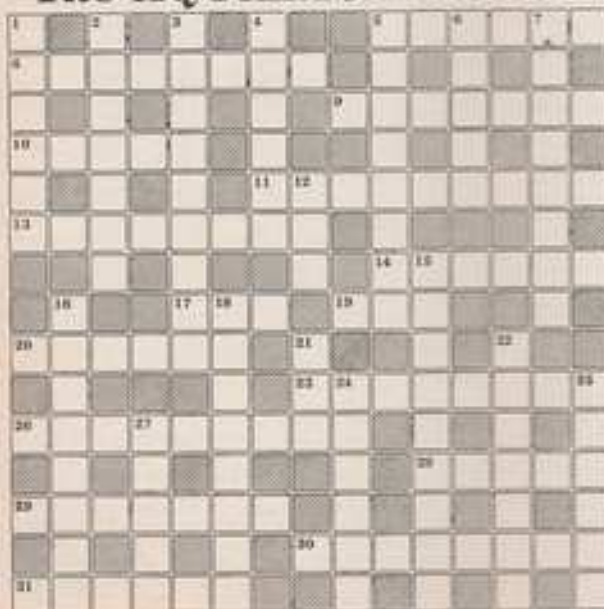
THE results were as follows: Best fish of the show: W. H. Hughes (T.A.B.). Best Gold-water fish: Mrs. O. M. Matthews (Northern Goldfish). Best other than best fish in the show: Tropical egg-layers—L. A. Pillingers (Merseyside). Tropical livebearers: J. J. Allen (T.A.B.). Goldfish: Mrs. O. M. Matthews (Northern Goldfish). Best Society furnished aquaria: J. Pinnerich and Bury, 79 pts.; 2. Backpod and Pyrite, 78 pts.; 3. Dewsbury, 78 pts. Goldfish: 1. Northern Goldfish, 71 pts.; 2. Bradford, 70 pts. Best individual furnished aquaria (toppod): 1. A. Wardle (Prestwich), 85 pts.; 2. A. Pith (Bradford), 83 pts.; 3. R. Tattersall (Accrington), 77 pts. Goldfish: 1. H. Smith (Accrington), 76 pts.; 2. G. Holmes (Bradford), 71 pts.; 3. R. Bennett (Blackpool), 69 pts. Novory aquacope: 1. P. Eastman (Belle Vue), 85 pts.; 2. Mrs. M. Knowles (Sheffield), 82 pts.; 3. Mrs. O. M. Matthews (Northern Goldfish), 75 pts. Best aquacope furnished aquaria: 1. Mrs. M. Knowles (Sheffield), 89 pts.; 2. Mrs. Smith (Stratford), 78 pts.; 3. J. V. Hill (Aston-under-Lyne), 66 pts. German goldfish and fishes: 1. C. R. Wilson (Bradford), 78 pts.; 2. H. Charlton (Northern Goldfish), 72 pts.; 3. W. H. Ramsden (Northern Goldfish), 70 pts. English (National and London): 1. W. H. Smith (Stratford), 83 pts.; 2. N. S. Farrell (Northern Goldfish), 80 pts.; 3. N. S. Farrell (Northern Goldfish), 77 pts. Moors: J. V. Stevenson (Accrington), 79 pts.; 2. A. Ingham (Accrington), 76 pts.; 3. B. Redwell (Northern Goldfish), 70 pts. Vegetals: 1. W. H. Ramsden (Northern Goldfish), 80 pts.; 2. Mrs. M. Smith (Stratford), 87 pts. Fancy goldfish, fountain, ornamental livebearers: 1. Mrs. Catherine Pinnerich, 84 pts.; 2. H. Pridall (Oxton), 81 pts.; 3. Mrs. O. M. Matthews (Northern Goldfish), 80 pts. Any species of goldfish fish other

than those above: 1. Mrs. O. M. Matthews (Northern Goldfish), 91 pts.; 2. H. Pridall (Oxton), 84 pts.; 3. A. Harker (Belle Vue), 79 pts. Guppies: 1. J. Allen (T.A.B.), 80 pts.; 2. Scott Morgan (Bromborough), 74 pts.; 3. C. Noble, junior (Gorton and Openshaw), 73 pts. Livebearers (pairs): 1. G. Holmes (Bradford), 78 pts.; 2. M. G. Davies (T.A.B.), 75 pts.; 3. J. Pinnerich (Belle Vue), 71 pts. Livebearers (single fish): 1. Mrs. D. Bourneough (Chapchew), 79 pts.; 2. A. Moss (Accrington), 76 pts.; 3. Mrs. P. A. Nichols (Oxton), 74 pts. Anguis: 1. J. Wood (Heywood), 81 pts.; 2. J. Barlow (Halifax), 80 pts.; 3. Mrs. West (Blackpool), 79 pts. Dwarf cichlids (pairs): 1. P. Mitchell (Manchester), 74 pts.; 2. S. Gane (Manchester), 73 pts.; 3. Scott Morgan (Bromborough), 70 pts. Dwarf cichlids (single fish): 1. K. Price (Stratford), 80 pts.; 2. Mrs. M. Pith (Bradford), 78 pts.; 3. K. Price (Stratford), 76 pts. Cichlids (A.O.V.): 1. J. Mitchell (Bradford), 89 pts.; 2. P. Mehta (Merseyside), 84 pts.; 3. K. T. Fenton (Merseyside), 78 pts. Egg-layers: 1. J. Baxter (Tadcaster), 82 pts.; 2. J. Baxter (Tadcaster), 80 pts.; 3. J. Baxter (Tadcaster), 77 pts. Gouramis A.V. and paradise: 1. H. Lovett (Manchester), 78 pts.; 2. S. H. White (Stratford), 72 pts.; 3. W. H. Smith (Stratford), 71 pts. Gouramis A.V. and paradise (single fish): 1. S. Horseshoe (Chapchew), 78 pts.; 2. J. Kane (Halifax), 76 pts.; 3. J. Tammy (Chapchew), 75 pts. Bards (pairs): 1. J. Smith (Blackpool), 77 pts.; 2. A. Faith (Bradford), 74 pts.; 3. Miss L. Shore (Oxton), 73 pts. Bards (single fish): 1. E. J. Parker (Merseyside), 84 pts.; 2. Mrs. P. A. Nichols (Oxton), 80 pts.; 3. W. H. Hughes (T.A.B.), 79 pts. Characins: 1. B. A. Pillingers (Merseyside), 86 pts.; 2. C. Holdsworth (Bradford), 84 pts.; 3. A. Moss (Accrington), 84 pts. Carps and minnows: 1. E.

Hughes (Belle Vue), 87 pts.; 2. D. Carr (Bradford), 82 pts.; 3. N. Hornbald (Tadcaster), 80 pts. Catfish: 1. L. McCourt (Gorton and Openshaw), 83 pts.; 2. W. Hughes (T.A.B.), 82 pts.; 3. C. Holdsworth (Bradford), 79 pts. Egg-laying loach (pairs): 1. B. Horseshoe (British Killifish Association), 82 pts.; 2. G. Richards (British Killifish), 78 pts. Egg-laying loach (single fish): 1. G. E. Richards (British Killifish), 80 pts.; 2. D. Gwynn (Sheffield), 79 pts.; 3. J. Allen (T.A.B.), 77 pts. Loach: 1. M. G. Davies (T.A.B.), 84 pts.; 2. K. J. Parker (Merseyside), 79 pts.; 3. D. Carr (Bradford), 78 pts. A.V. other than those above: 1. W. H. Hughes (T.A.B.), 92 pts.; 2. G. Moorhouse (Bradford), 48 pts.; 3. M. G. Davies (T.A.B.), 80 pts. Dwarf angelfish: 1. K. Wilkeson (Oxton), 85 pts.; 2. W. Bradford (Sheffield), 81 pts.; 3. K. Wilkeson (Oxton), 80 pts. Breeder (livebearer): 1. C. Jones (Blackpool), 81 pts.; 2. J. E. Shore (Oxton), 80 pts.; 3. J. E. Shore (Oxton), 78 pts. Breeder (goldfish): 1. H. Charlton (Northern Goldfish), 75 pts.; 2. J. Baxter (Northern Goldfish), 72 pts. Breeder (fish): 1. A. B. Wilkie (Stratford), 78 pts.; 2. B. Wiltshire (Bradford), 76 pts.; 3. R. Wiltshire (Bradford), 68 pts.

The order for the most attractive stands was: 1. Halifax; 2. Blackpod and Pyrite; 3. Chapchew and Darnley; 4. Tadcaster. Tropical Aquarists' Breeders were winners whose stands with the most points for the highest pointed awards and the prize for the individual exhibitor among the most awards went to W. A. Hughes (T.A.B.). The Home Stand was retained by Lancashire and the trophy for the best pair of goldfish was won by J. Tammy (Chapchew). The exhibitor with the most breeders points was K. Wilkeson (Oxton).

The AQUARIST Crossword Compiled by L. BRADLEY



CLUES ACROSS

8. One-celled animal (6)
9. I, with water and rain mixed, for the fish (8)
10. Incomplete song by a guest at a banquet (7)
11. Perhaps bred by Thomas Jacobus? (5)
12. Five fish bred in a sea pen make 11 of the sea-side (5)
13. Echinoderm (8)
14. South American beaver (6)
15. Measure of resistance (3)
16. Japanese inventory unit (3)
17. Small portion of time (6)
18. Features of crustaceans, myriapods and insects divided into articulations (5)
19. Hypopharynxes are (4, 5)
20. Sounds like a clasp, this fabric? (5)
21. Does it make one see white elephants? (4-3)
22. Genus of pond mammals (8)
23. Sea hawk (6)

CLUES DOWN

1. Sagittaria (8)
2. Occurring every fourth day (7)
3. Remonaco. Walked on by a bird? (9)
4. Names the current price (6)
5. Having pH greater than 7.0 (6)
6. May-made filix (5)
7. *Aplocheilichthys subspinosus* (8)
12. Suitable description of the dwarf gourami (3)
15. Upstream on the upside-down catfish (6)
16. A Na, B Ho, C (6)
18. Like father, like son (8)
21. Vehicle that is backed up by a rotating organ-ism (5)
22. The ears (wing) (7)
24. Floating (6)
25. Set of nine (6)
27. Kerite drum (5)

Solution on page 168

ON Sunday 31st October, a meeting of the South London Section of the F.G.A. was held at the Lady Gonne House, Hawkstone Road, Rotherhithe, London, S.E.16. This year membership increasing at such a fast rate, this new meeting place was accepted by the members as the regular meeting place, as it offered members more room and greater comfort. Even though it was raining, a record 45 members and friends were present, with some 65 entries for the Table Show—all this was judged by Mr. Q. Goodall. After the committee's reports, a general discussion took place, this included heating arrangements other than submerged heaters 1949. After light refreshments were had, fish photography was discussed supported with a demonstration. Results of the show were:—
 Dams: Tuffin 1, A. Park (72 pts.) 2, F. Baker (68 pts.) 3, Fan Tails: 1, A. Goodall (80 pts.) 2, J. Tatum (77 pts.) 3, Veil Tails: 1, P. Summers (80 pts.) 2, R. George (76 pts.) 3, R. Collier (71 pts.) 4, J. George (70 pts.) 5, Colour Class: 1, R. Collier (84 pts.) 2, V. Barber (79 pts.) 3, A. Tammam (83 pts.) 4, Original: 1, A. Jamieson (76 pts.) 2, A. Jamieson (64 pts.) 3, A.O.V. Female: 1, A. Goodall (75 pts.) 2, A. Park (70 pts.) 3, F. Baker (65 pts.) 4, Superb Females: 1, A. Goodall (75 pts.) 2, A. Park (70 pts.) 3, F. Baker (65 pts.) 4, Single Tails: 1, A. Goodall (78 pts.) 2, D. Ford (75 pts.) 3, A. Tammam (83 pts.) 4, Original: 1, A. Jamieson (76 pts.) 2, A. Jamieson (64 pts.) 3, A.O.V. Female: 1, A. Goodall (75 pts.) 2, F. Baker (73 pts.) 3, A. Park (72 pts.) 4, Broodfish Pairs: 1, R. George (77 pts.) 2, H. Mottill (58 pts.) 3, R. Collier (64 pts.) 4, Any Guppy keeper will be more than welcome. Contact the secretary at Herringway 4656, or write to Mr. A. Goodall, 44, Redriff House, Rotherhithe, London, S.E.16.

THE Table Show of the Govevrey Pool and A.S. resulted as follows:—A.O.V. Tropical: 1, Mr. E. Leggett (74 pts.) 2, Mr. T. Green (73 pts.) 3, Mr. E. Mashey (72 pts.) 4, A.V. Coldwater: 1, 2 and 3 Mr. R. L. Broadfield. Broodfish (eggs): 1, Mr. D. Duxon (78 pts.) 2, Mr. R. L. Broadfield (75 pts.) 3, Mrs. Payne (73 pts.)

THE Members Show results of the Bradford and District A.S. were:—Livestock: 1, C. E. Wilson 7, L. Haley 3, R. Wilmshurst, Barber 1, 2, and 3, A. Finch, Charcoal 1, 2, and 3, D. Carr, Carp and Minnow: 1, D. Carr 2, J. Ayres 3, C. Holdsworth, Anabantids: 1, H. Greenwood 2, L. Haley, Fishers: 1, C. E. Wilson, Goldfish: 1, Mrs. M. Finch, A.O.V. 1 and 2, C. Holdsworth 3, H. Greenwood, Breeders Livestock: 1 and 2, C. Holdsworth 3, L. Haley, Broodfish Eggs: 1, R. Wilmshurst 2, C. Wilson 3, A. Finch, Coldwater: 1, C. E. Wilson 2, Master E. J. Brown, Plants: 1 and 2, R. Wilmshurst, Best Fish in Show: Mrs. M. Finch, Best Livestock possessing the P. Reynolds trophy, C. E. Wilson.

THE Throck Aquarist club held their third and final inter-club show this year against Southend and Basildon recently.

The five classes covered, were those not included in previous shows, and there were 78 entries. The results were as follows:—Molluscs: 1, Mr. B. Nicholls (Throck) 77pts.; 2, Mr. Brown (Basildon) 76 pts.; 3, Mr. B. Barber (Throck) 75 pts.; 4, Mr. B. Duxon (Southend) 74 pts. Catfish: 1, Mr. P. O. Bryan (Throck) 82 pts.; 2, Mr. Stockwell (Basildon) 79 pts.; 3, Mr. D. Duxon (Throck) 78 pts.; 4, Mr. A. Whelan (Throck) 77 pts. Swordtails: 1, Mr. D. Duxon (Throck) 80 pts.; 2, Mr. Stockwell (Basildon) 79 pts.; 3, Mr. B. Barber (Throck) 78 pts. Goldfish A.V.: 1, Mr. B. Nicholls (Throck) 81 pts.; 2, 3 and 4, Mr. B. Barber (Throck), A.O.V. Tropical: 1, Mr. B. Nicholls (Throck) 83 pts.; 2, Mr. B. Nicholls

(Throck) 81 pts.; 3, Mr. Balchone (Throck) 80 pts.; 4, Mr. Tinkard (Throck) 78 pts. and Mr. Dudley (Basildon) 78 pts. Best Fish in Show: Mr. B. Nicholls (Throck). The previous meeting for 1949 resulted as follows:—At Southend, Southend 17 points, Throck 12 points, Basildon 11 points. At Basildon, Southend 4 points, Throck 28 points, Basildon 10 points. At Throck, Southend 1 point, Throck 39 pts., Basildon 11 points. Total points for the year:—1, Throck, 77 points; 2, Basildon, 53 points; 3, Southend, 22 points. Throck Aquarist club meets at Gypsy Lane Hall, Orms, on alternate Monday evenings at 8.00 p.m. New members are always welcome.

THE Stone A.S. reports a highly successful first open table show which was held at the end of October. The hall was crowded with over 300 entries which came from 21 visiting societies and 50 exhibitors.

The standard of entry was high and marks awarded to winning specimens in each of the 21 classes averaged 75%, with 68% for second, and 45% for third. There were several successful novices of the venture has encouraged the committee and officials to consider this as an annual event for the future. The show committee would like to express their many thanks to all who helped to make the show such a success.

AT a recent meeting of the Throck Aquarist Club the show secretary, Mr. E. Nicholl, conducted a very interesting and informative Quiz on "fish colours". This was won by Mr. B. Nicholls. Also, table shows for the month were held, the results being as follows:—Goldfish Single Tail: 1, 2 and 3, Mr. B. Barber, Planty coldwaters: 1, Mr. B. Nicholls; 2 and 3, Mr. D. Duxon; Plants Tropical: 1, Mr. B. Nicholls; 2, Mr. B. Barber; 3, Mr. D. Duxon. The Home Aquaria competition was won by Mr. D. Duxon by a narrow margin from Mr. B. Nicholl.

The club meets on alternate Mondays at 8 p.m. at Gypsy Lane Hall, Orms. New members always welcome.

RECENTLY Houghton & District A.S. were the guests of Horden & Sadgate A.S. for a far show, and 20 specimens. The Horden Society were winners in both competitions. The Houghton-in-Spring Society were also guests of Southend A.S. for a far show and quiz losing the first but winning the second. On each occasion the quiz programme was voted a great success by all members. For their next meeting, to be held on 6th Dec., they will be moving to new quarters, and thereafter on the first Monday of every month will meet in The Barn House, Hutton Road, Houghton-in-Spring.

The Annual Open Show, to be held on 3rd April 1960, in Herringway Barn, Wilford Hall, at which, it is hoped to see all those who attended the very successful show in April of this year at the show hall.

TWO meetings of the Newport A.S. were held during the month of October, both being of particular interest to the photographer, aquarist. At the first meeting of the month four members of the Society, Messrs. Leo Barnemann, Jack Burston, Eric Harris, and Drew Phillips, joined together to form a slide show on aquatic and other subjects of mutual interest and at the next meeting members enjoyed a slide-film on marine life entitled, "The Coral Wonderland", plus a supporting lecture "Annual & Gum Show" has been set for 19th September, 1960. Venue yet to be decided. In addition for the first time in the history of the aquatic hobby in South Wales a resolution was passed to include a class (or perhaps classes) for Coldwater and/or Tropical Marine Fish in the event.

Two meetings were held during November. At the first meeting of the month members enjoyed a slide lecture on "Barbs", hired from

the well-known Irish aquarist, Mr. Alfred Robbison. At the second meeting the guest speaker was Mr. Barry Smith of the Pristynod A.S. who spoke of his experience in breeding many varieties of fish, including the Neon and Glowlight Tetras and several members of the Barb family. A table show in two classes was held, judged by Society member Mr. Gille Lewis, (who is also a "B" class judge under the Patronage of British Aquarist Society), and results were as follows:—Any Variety Eggplant: 1 and 2, Mr. Ralph Harris (Society President); 3, Mr. E. Glyn Jones. (Society Secretary) the same placings were recorded in the supporting class for Any Variety Livestock.

The Society is now producing a monthly magazine under the editorship of Mr. T. G. Wall. Inquiries are invited from other societies producing a similar publication with a view to their exchange. All communications in this respect should be addressed to the editor at 3, Wyverton Road, Newport, Mon.

AT the annual shield show held by the Houslow and District A.S. to find the best fish of the year in each class the results were:—Chocoy: 1, Mr. Thomas (Southend) 71½ pts.; 2, Mr. Sheppard (Basildon) 71 pts.; 3, Master Clive Walker (Neon Tetra) 70 pts. Barbs: 1, Mr. Luff (Oppidians) 73½ pts.; 2 and 3, Mr. Thomas (Koi) 71½ pts. and (Swordtail) 70 pts. Pairs: 1, Mr. Perry (Albino Tiger) 142 pts.; 2, Mr. Thomas (Sulcata) 141 pts. He for third between Mr. Perry (Albino Tiger) and Master Clive Walker 140 pts. Liveplants: Mr. Perry (Speaking Gourd) 74 pts.; 2, Mr. Thomas (Oval Gourd) 74 pts.; 3, Mr. Sheppard (Three Spot Gourd) 73 pts. Ws.: 1 and 2, Mr. Sheppard (Guppies 71½ and 71 pts. Any other Variety: 1, Mr. Thomas (Sourum Goldfish) 71 pts.; 2, Master Clive Walker (Kuhli Loach) 70½ pts.; 3, Mr. Perry (Zebra Danio) 70 pts. Breeders Eggplant: 1 and 2, Mr. D. Woodward (Honey Gourami) 3, Mrs. Barber (Honey Gourami), Broodfish Livestock: 1, Mr. D. Woodward (Velvet Molly), Coldwater: 1, Master Clive Walker (Pinnac Goldfish), Home Furnished Aquaria: 1, Mr. Perry 83 pts.; 2, Mr. Thomas 80½ pts.; 3, Mr. Patrick 80 pts.

THERE were 240 entries at the Lanchester Aquarists Breeders' Society Annual Table Show.

The trophy winners were as follows:—A.V. Guppy: 1, R. Wilshaw (L.A.B.S.); 2, V. Farrington (L.A.B.S.); A.V. Swordtail: 1, A. Wilkie (Stratford); A.V. Molly: 1, A. Hill also best Breeder and Best Livestock (L.A.B.S.); 2, A. Wilkie (Stratford); A.V. Fry: 1, I. Barker (L.A.B.S.); 2, C. Pennington (L.A.B.S.); 3, A. Hill (L.A.B.S.); A.O.V. Liveplants: 1, I. Barker (L.A.B.S.); shield 2, T. Davies (Heywood); 3, H. and B. Wilson (Macclesfield); Charcoal: 1, K. Wilshaw (Orms); 2, D. Ince; 3, A. Parkin (Huddersfield); Barb: 1, A. Wilkie; 2, A. Parkin (Huddersfield); 3, A. Tinkard (L.A.B.S.); Goldfish: 1 and 2, A. Wilkie; 3, R. Warren (Wigan); Minnow: 1, E. Wilshaw (Orms); 2 and 3, A. Wilkie (Stratford); A.O.V. Tropical: V. Farrington (L.A.B.S.); A.V. Guppy Pair: 1, V. Farrington, Best Broodfish Pair (L.A.B.S.); 2, R. Brackley (Macclesfield); 3, T. Davies (Heywood); A.O.V. Livestock: Pairs: 1, A. Hill (L.A.B.S.); 2, W. Poole (Leigh); 3, J. Hery (Blackpool); A.V. Eggplant Pair: 1, R. Moorcroft (Macclesfield); 2, A. Ramsdale (L.A.B.S.); 3, F. Gregory (Orms); Goldfish: 1, F. Yates (L.A.B.S.); 2, A. Gardner (Stratford); 3, A. Hill (L.A.B.S.); Fishery: 1, A. Parkin (Huddersfield); 2, A. Wood (Heywood); 3, R. Brackley (Macclesfield); A.O.V. Liveplants: 1, E. Hill (Macclesfield); 2, A. Gardner (Stratford); 3, L. Kay (Huddersfield); Catfish (including Loach): 1, R. Parkes (Macclesfield); 2, R. Moorcroft (Macclesfield); 3, A. Gardner (Stratford); Carp and Minnow including Minnow and Pinnac: 1, R. Parkes (Macclesfield); 2, R. Hughes (Belle Vue); 3, R. Barnwell (Orms); Charcoal: 1, F. Mulla (Macclesfield); 2, A. Wilkie

(Hertford); 3, K. Parks (Mansfield). Gold-winner: 1 and 2, J. Wainman, (L.A.B.S.); 3, T. Minter, (Mansfield); A.V. Guppy: 1 and 2, R. Wilson, (L.A.B.S.); 3, V. Fortinsson, (L.A.B.S.). Woodruff: 1, J. Hayes, (Hackney); 2, B. Laine, (Leah); 3, K. Hill, (Hackney). Mollie: 1, B. Madley, (Ossing); 2, B. Pawley, (Belle Vue); 3, K. McCreath, (Mansfield). Platy: 1, D. Ince; 2, Mrs. P.A. Nichols, (Ossing); 3, S. Collins, (Belle Vue). A.V. Tropical: 1, J. Smith, (Hackney); 2, A. Turlock, (L.A.B.S.); 3, D. Cooke, (Mansfield). Best fish in Show: K. Parks, (Mansfield). The judges were Mr. Barry Peughler, Mr. Arthur Wardle. The society holds its meetings at 8 p.m. in the Play House, Great Moor St., Bolton, on the second Monday of each month and beginners and experts will be welcome.

THE results of the Thurrock Aquarist Club's annual show were as follows:—Class 1: 1, E. Nicoll (vertical guppy); 2, V. Black (vertical guppy); 3, P. Hinkley (half black guppy). Class 2: 1, K. Nichols (black mollie); 2, B. Barber (red platy); 3, B. Barber (vertical mollie). Class 3: 1, P. Sowells (nigger loach); 2, B. Barber (nigger loach); 3, P. Sowells (cherry and tiger tetra). Class 4: 1, P. Sowells (blue light tetra); 2, E. Nicoll (A.V. amaranth); 3 (tied), D. Dwyer (gold cave tetra) and S. Handie (black tetra). Class 5: 1, 2 and 3, D. Dwyer (all red fish). Class 6: 1, B. Barber (dwarf gourami); 2, D. Dwyer (dwarf gourami); 3 (tied), S. Welton (lion gourami) and D. Dwyer (black lion gourami). Class 7: 1, E. Nicoll (down rabbit); 2, P. Sowells (W.C.M. minnow); 3 (tied), B. Nicholls (W.C.M. minnow) and D. Dwyer (zebra danio). Class 8: 1, S. Welton (C. parrotfish); 2, P. O'Bryan (C. boreomani); 3, B. Tackard (C. melanostomus). Class 9: 1, B. Barber (P. playfaish); 2, B. Tackard (shell loach); 3 (tied), R. Stearn (P. playfaish) and B. Barber (bristie). Class 10: 1, B. Barber (vertical goldfish); 2, B. Nicholls (carnet goldfish); 3, B. Barber (carnet goldfish). Class 11: Parrotfish aquaria—1, B. Nicholls; 2, B. Barber; 3, J. Hartley. Class 12: 1, G. Rowe (red swordtail); 2, B. Barber (red swordtail); 3, G. Rowe (orange swordtail). Class 13: 1, E. Nicoll (A. ramsesii); 2, B. Nicholls (blue acara); 3 (tied), B. Nicholls (spotted) and B. Nicoll (blue acara). Class 14: (swims)—1, S. Handie (black widow); 2, P. O'Bryan (C. boreomani); 3, P. Jarvis (Jack Dempsey). The places for the best fish in show was won by Mr. E. Nicoll (A. ramsesii).

At a recent meeting of the Hounslow & District A.S. a table show for shrimps was held. First was Mr. Sheppard with a silver shrimp 91 points; second, Mr. Patrick Joyce with, 89 points; third Mr. South black

shrimp, 88 points. The judges were Messrs. R. Selary and K. Purice. At the inter-club show the result was Hounslow A.S. 1,000 points; Weybridge 979 points; Sursey A.S. 946 points. The Hounslow A.S. are still enjoying large attendances at their regular fortnightly meetings which are now held at the Territorial Army Centre, Hounslow Road, Hounslow. The annual dinner and social where the years prize winners will receive their awards will this year be held in Pitham on Saturday, 27th November.

NEW SOCIETIES

On the 11th November the Gosport & District A.S. was formed at an inaugural meeting attended by 28 local enthusiasts. Apart from the business of electing officers and deciding policy, the new Club was given a talk on fish-keeping techniques by Mr. J. Sillwell, Chairman of the Portsmouth A.S., who also gave some invaluable guidance on the organisation and running of a new Society. Although as yet the Club does not have a permanent meeting-place, new members will be most welcome and can obtain further information from the Secretary, Mr. H. Hooper, P.O.'s Mess, H.M.S. Durdan, Lee-on-Solent, Gosport, Hants.

A New Society has been formed to cater for all aquarists interested in marine aquaria, both tropical and coldwater. The society aims to increase the number of aquarists interested in this aspect of the hobby, and to promote the study of marine life, and will also attempt to support all other clubs including marine clubs in open shows. Please address all enquiries to:—Mr. G. H. Jennings, The Marine Study Aquarist Society of Gt. Britain, 7, Garscombe Rd., London, N.14.

RECENTLY an Aquarist Society was formed in Hertford and is known as the Hertford and District A.S. The next meeting is to be held on Tuesday 14th December at 7.30 p.m. the meeting place being Tapscott Junior School, Hampton, Dane Road, Hertford. Anyone interested in joining the society will be very welcome at the meeting or should contact the secretary, Mr. R. Bryson, 67, Prospect Walk, Tapscott, Hertford.

An inaugural meeting was held recently to form the Valley A.S. The society is open to anyone interested in this fascinating hobby and its main aim is to attract people from the Rampton, Edensfield, and Ranswell area. The meeting was attended by ten members. The officers elected for the first year were:—

Chairman, Mr. E. Taylor; vice-chairman, Mr. J. Butterworth; Secretary, Mrs. J. M. Isherwood, 8, Boley St., Soodfield, Bury; Treasurer Mr. P. Alexander.

At the first meeting there was an attendance of twenty-class members. There were eighteen entries for the table show A. V. fish the result being as follows—1, Mr. M. Goodchild, Black Mollie; 2, Mr. P. Taylor, chris ig. Gourami; 3, Mr. G. Isherwood, Red Tail Black Shark. Mr. J. Butterworth gave a talk on giving an aquarium, after which a fish section was held.

It was decided that meetings would be held every other Monday at the Masons Arms, Rampton at 8 p.m. Further information can be obtained by applying to the Secretary Mrs. J. M. Isherwood, 8, Boley St., Soodfield, Bury, Lancs.

OBITUARY

It is with deep regret the Tottenham & District A.S. have to report the untimely death of Mr. George Boulds, on 2nd November 1965. He was an enthusiastic member of the Society and a well known supporter of Open Shows. He will be greatly missed by friends everywhere.

Crossword Solution

N	Q	C	Q	A	M	O	E	B	A
A	Q	A	R	I	U	M	L	R	L
T	A	O	I	O	S	K	L	I	O
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64, King's Road, Reading
Telephone: Reading 53632
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Grassby, Joe., F.R.H.S.
"The Glen" Fisheries, Mobblerley, Nr. Knutsford
Tel.: Mobblerley 3272 W. C.T.P.A.A. R.&A.

CORNWALL

Marine Facilities Ltd.
Commercial Buildings,
Custom House Quay, Falmouth
Telephone: Falmouth 88
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Plymouth Tropicals
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Telephone: Plymouth 62663
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DURHAM

The Fish Bowl
Burdon Road, Sunderland
Telephone: Sunderland 71026
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Metcalf, G. R.
187, Northgate (near Minories Garage)
(On main A.1 road) Darlington
Telephone: Darlington 5991
E.C.D. Wednesday. R. C.T.P.A.A. R.&A.

Powell, M.C.
The Honey Pot,
Claypath, Durham City
Telephone: Durham 2108
E.C.D. Wednesday. R. C.T.P.A.A. R.&A.

ESSEX

Goodmayes Aquaria
70 Grove Road, Chadwell Heath
Telephone: Goodmayes 2594
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Skilton, C. J., Aquarist
159, Galsleywood Road,
Chelmsford
Telephone: Chelmsford 56878
E.C.D. All Day Saturday. W. C.T.P.A.A.

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Bridgemary Pet Stores
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Telephone: Fareham 4781
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Wingate Zoological Supplies
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Gillingham
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continued on page 57

PREPAID ADVERTISEMENTS—continued from page 87

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Fungus. Cures body fungus, fin and tail rot etc.	5 3
Cause lot. Cures White spot, shimmey and Cilia.	5 3
Cause Chlorine. Neutralise chlorine contents of fresh tap water.	5 3
Heatstall. For making sea water for Marine fish.	5 3
4 lb. bag makes 10 gals. 17/4 plus 2/4 p. 4 p.	
2 lb. bag makes 5 gals. 9/4 plus 1/3 p. 4 p.	

Brownam

White spot cure	2 0
Fungus cure	2 0
Plant Fertiliser	2 0
Hydro Nutra Vitalizers	1 3
Claris water recycler	2 4
Claris Tablets	1 4
Liquor for Fungus and Fishes	Small 2/-, large 4/4
Vital Rejuvenating tablets	1 3
Datum Aquarium salt	1 3
Datum Velvet Cure	2 4
Coral Oxygen tablets	2 4
Surgrrow Disease	2/-, 4/-
Turfin	2 4
Tropalin	3 4

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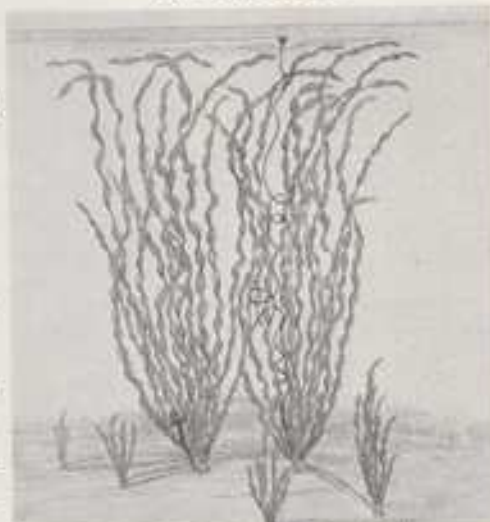
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