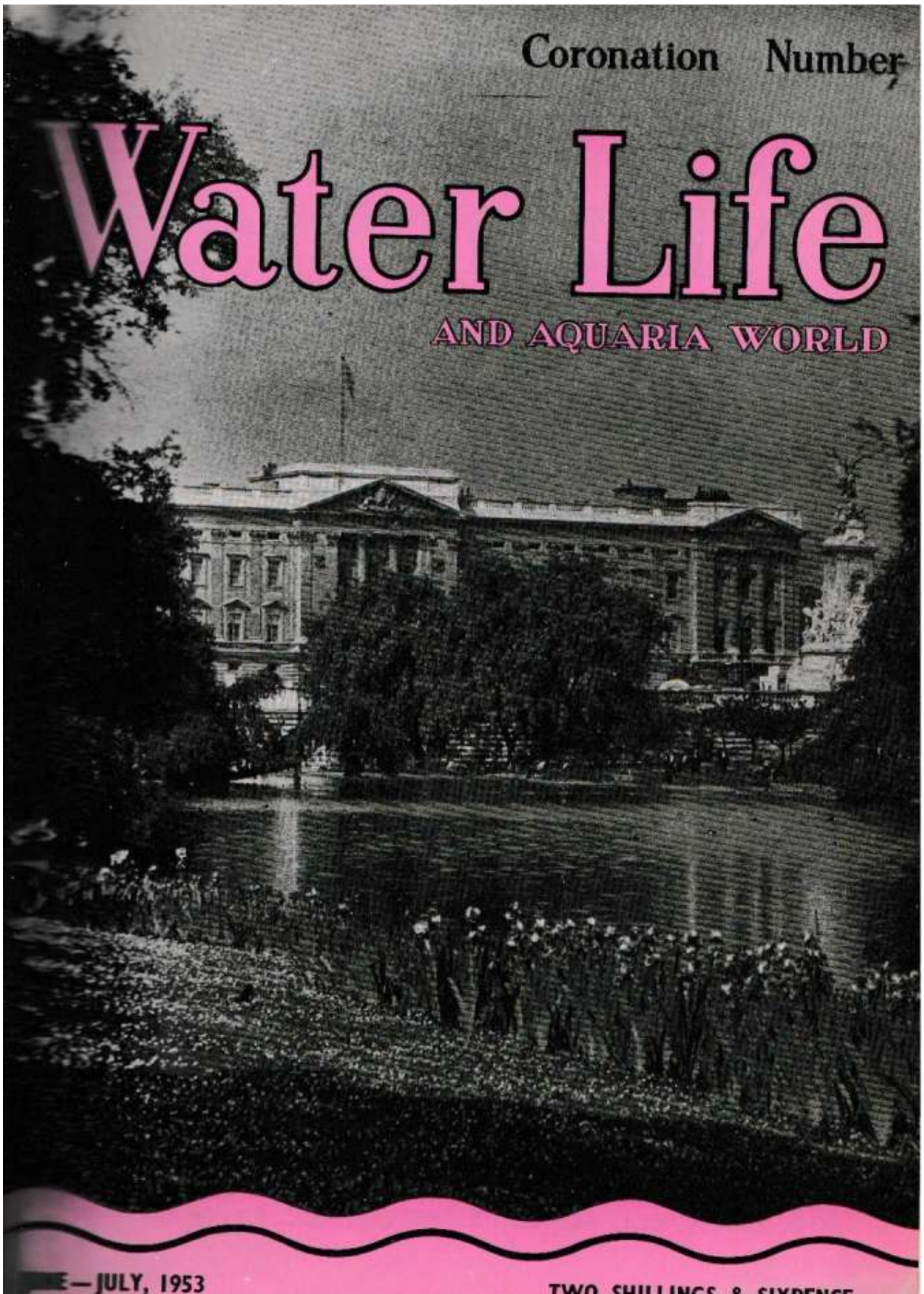


Coronation Number

Water Life

AND AQUARIA WORLD



E— JULY, 1953

TWO SHILLINGS & SIXPENCE

Water Life

AND AQUARIA WORLD

VOL. 8. No. 3 (New Issue)

CORONATION NUMBER

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Photograph

Baron

On the occasion of her Coronation, readers throughout the Commonwealth and Empire will join with WATER LIFE in wishing Her Majesty The Queen a long and peaceful reign. This picture shows Her Majesty wearing a diamond and pearl diadem and, across her gown, the ribbon and star of the Order of the Garter. H.R.H. The Duke of Edinburgh is in the uniform of Admiral of the Fleet.

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FRONT COVER: BUCKINGHAM PALACE

The smooth waters of the lake, the shapely outline of the trees and the well-kept appearance of the lawns in the adjacent St. James's Park make a picturesque foreground to this view of the official London residence of Her Majesty The Queen.

Photograph

[Fix

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Loyal Greetings From British Aquarists

Federation of British Aquatic Societies

IN this Coronation Year, we humbly offer, on behalf of the Federation of British Aquatic Societies, our loyal greetings to Her Most Gracious Majesty, Queen Elizabeth. May her reign be long and peaceful.

United as we are in our grand hobby, we can and will strive to make a worthy contribution to the new era.

We look for inspiration to our beloved Queen and assure her that all who, whilst treading diverse paths in life, are engaged in the pastime of keeping fishes, will prove to be dutiful subjects. God Save the Queen.—T. E. BUTT, Chairman.

Federation of Northern Aquarium Societies

THE clubs affiliated to the Federation of Northern Aquarium Societies join in sending their loyal greetings to Her Majesty The Queen at the time of her Coronation. All of us who are participating in the hobby of aquarium keeping express the hope that her reign will be a long and peaceful one.

The Federation and all its members are happy to be associated with the dutiful addresses made on this great occasion. It believes that, under her wise leadership and guidance, Great Britain and the Commonwealth of Nations will prosper, and it hopes that our hobby likewise will flourish.

The close co-operation by fishkeepers on an international scale is well-known and we believe that during the new reign there may well be a parallel strengthening of ties not only between our family of Nations that acknowledges one Crown, but between all Nations of the world.—J. F. WILKINSON, M.Sc., Ph.D., M.D., F.R.C.P., F.R.I.C., President.

Federation of Guppy Breeders' Societies

THE glorious history of Great Britain is ennobled by the prosperity and endeavour of two Queens' reigns—those of the first Elizabeth and Queen Victoria.

Now that the throne of Britain is to be graced again with the regal presence of a Queen, all members of the Federation of Guppy Breeders' Societies look forward with glad hearts to the repetition and continuance of the same spirit of adventure shown in the times of her illustrious forebears.

On June 2nd, the world will be rejoicing with us on the occasion of the Coronation of Her Most Gracious Majesty, Queen Elizabeth II.

Wherever her peoples gather on such an occasion there is a time-honoured custom that we observe. Let us then on that great day, with all humility and pride, loyally raise our glasses that the world may ring with our proud toast "The Queen—God Bless Her. Long May She Reign"—H. S. WHITE, President.

Goldfish Society of Great Britain

OFFICERS of the Goldfish Society of Great Britain are grateful for this opportunity of conveying to Her Majesty The Queen, the loyal greetings from all members of the Society on the occasion of her Coronation.

Not only do we assure Her Majesty Queen Elizabeth II of our loyalty to her as the head of the greatest Commonwealth of peoples the world has seen, but also we send with humility our devotion and affectionate greetings.

We are confident we shall be serving under the most popular Queen of all time. May we prove worthy of the honour.—L. C. BETTS, M.B.E., Chairman.

Glimpses at the Hobby in the Far East

Aquarists in the Hong Kong Area Visited
by Mr. G. W. Drummond



A local inhabitant
glazing outdoors
in Hong Kong.

Illustrated by
the author

A fish vendor displaying his wares in Mercer Street, Hong Kong.



RECENTLY I returned to Hong Kong from Korea and paid many interesting visits to Madame du Breuil. I am indebted to her for many kindnesses, her authority on "anything Chinese" and her vivid interest in anything to do with fish.

Madame du Breuil is keenly interested in the many species of marine fish that abound around Hong Kong and had successfully kept *Scatophagus argus*, together with two unnamed types, in 50 per cent sea water for some time. They were in beautiful condition and I imagine that before long a larger marine tank will be installed in her house. I hope to be able to assist her in collecting some of the fish found locally.

I am also indebted to a friend of Madame du Breuil, a Miss Chu who arranged for me to visit a local Chinese herbalist. He had been successfully breeding Neon Tetras (*Hyphessobrycon innesi*) for some time. Miss Chu acted as interpreter when we went to visit our Chinese host. The fish were housed mainly in square tanks kept in a backyard

and heated by Chinese charcoal burners. Most tanks registered 82 deg.F. Fish being bred at the time were Neon Tetras, *Nannostomus anomalus* and *Pecilibrycon unifasciatus*. Others bred periodically, mainly in the summer, are *Hyphessobrycon gracilis*, *H. heterorhabdus*, *H. rosaceus*, *H. serpa*, *Hemigrammus pulcher*, *Thayeria obliqua*, *Pristella riddlei* and *Gasteropelecus levis*, all of which were in superb condition.

Interest in Neon Tetras

Naturally my interests were centred on the Neons for I had not seen any being bred previously but before I say more, I should point out that Chinese fish breeders are reluctant to give information on "difficult-to-breed" fish, particularly Neons. I believe my host was one who had been continually successful. Neons cost 40 HK dollars (£1 10s. 0d.) per pair.

I did not wish to appear interested in Neons alone but I was able to observe some fry of this species which were only two days old. They were in a tank 20 in. square filled with local rainwater and kept at 82 deg.F. Plants consisted of just three small Floating Ferns. The fry were very difficult to see even with a magnifying glass but they were

(Continued next page.)



Above: Catching Semi-banded Barbs in the China New Territories. Medakas also abound in these streams. Right: an informal fish pond at Miyajima, nr. Hiroshima, Japan, containing Hi-roi and other varieties of Carp.

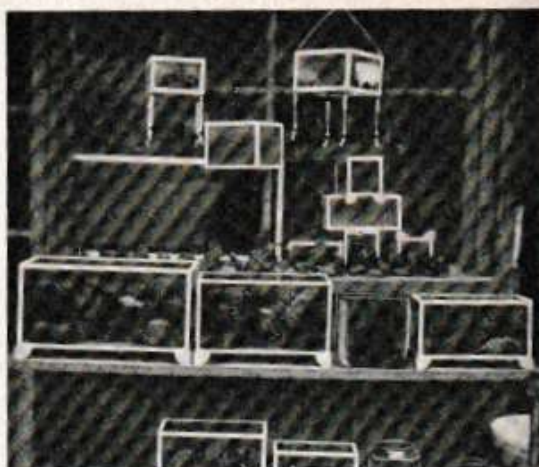


observed to be swimming beneath a rock that was balanced on a small piece of $\frac{1}{4}$ in. plate glass.

My host would not give any details of the breeding other than the fish showed their "neon" streak in 15 days and were then moved to larger tanks. I observed two other tanks containing male and female Neons, a few of the females bulging with spawn. My host said they were very difficult to sex, he usually brought them to spawning condition and then separated them. He also mentioned that he did most of his fish breeding in the summer months but continued with Neons all the year round.

In one large 40 in. square tank were male and female *Cichlasoma severum* about three inches long. My informant said they were difficult to spawn but they did breed when about two years old. He would give no further details. However, Madame du Breuil hopes to pay him a visit in the near future. Perhaps her thorough knowledge of the Chinese language will induce this successful breeder to part with some of his fish-breeding data.

It was kind of him to permit my visit and my thanks are also given to Miss Chu who, by the way, successfully reared a brood of Angel Fish some time ago, after being the owner of the parents for only a few days. Miss Chu said "I'm only a novice". Her secret she gave as buying the Angel Fish when they were ready to spawn! Madame du Breuil had three or four of Miss Chu's Angel Fish which were in fine condition.



A Goldfish shop at Kure, Japan, where Telescopic-eyed Goldfish, Veiltails, Hi-goi Carp, livefoods, hanging tanks, and those of more orthodox designs were on sale.

— Know Your Fishes —

No. 27. Purple-striped Gudgeon

(*Mogurnda mogurnda*)



Photograph]

[G. J. M. Timmerman

It is not surprising that the Purple-striped Gudgeon (*Mogurnda mogurnda*) has enjoyed only limited popularity. Its colouring and shape are certainly a little unusual and the fact that it is one of the few Australian tropical aquarium fish makes it worthy of a second glance, but liveliness, an attribute not usually found in members of the Eleotridæ (relatives of the true Gobies), is carried to an excess and fin ripping is a favourite pastime. In fact, the fish should be kept only with others of its own species. As its temperament would suggest it is primarily a carnivore, particularly when mature, and Earthworms, White Worms and *Daphnia* are relished.

Descriptions of the colouring in *Mogurnda mogurnda* have varied somewhat and there seems to be two colour patterns which have accounted for the names *Krefftius adspersus* and *Mogurnda mogurnda* being used for the species. In fact, they have been listed as separate species but this is not correct.

Main cause of the confusion seems to have been the

presence or absence in particular specimens of purple stripes on the gill covers which account for the popular name Purple-striped Gudgeon. In most of the fish manifesting this characteristic the body is olive with metallic blue and brown-red markings. Such fish were generally known as *Krefftius adspersus*.

The other colour variety, whilst without the gill markings, has their absence more than compensated by daubs of green, blue, red and/or yellow and black on an olive-brown body. Fish with this colour pattern, which have run under the appropriate title of Trout Gudgeon, usually have been called correctly *Mogurnda mogurnda*. In both varieties the fins are generally yellow and the dorsal, caudal and anal particularly are flecked with brighter colours. Sometimes the outer parts of the fins are plain yellow but there may be a brown border. Length of fish in the wild can be eight inches but in aquaria they rarely reach four.

The term "Gudgeon" in the popular name of this fish is deceptive, as Gudgeons belong to the Family Cyprinidæ.

Sexes are difficult to differentiate, one authority suggests that the male is more brightly coloured whilst another has found that the fins of the male are larger. Possibly the only 100 per cent certain indication is greater body fullness of the female at maturity. From this it would appear that the lower fish in the illustration is the female, which tends to be confirmed by reason that the upper fish has slightly more developed fins.

Compared with its related species in the Eleotridæ, *Mogurnda mogurnda* has a wide temperature range, 60-80 deg.F., but for breeding it should be 72 deg. or a little higher. The eggs are laid on threads on the glass side of the aquarium or on a rock where they are guarded by the male who fans them with pectoral and anal fins. The eggs hatch in from five to nine days when the parent male should be removed. Infusoria initially followed by crushed Earthworms can form the first foods for the fry. After a week they should be able to take Brine Shrimps and Mikro-worms as growth is rapid.

The habitat is North-west and Eastern Australia where there are stretches of freshwater near the coast. Class: Pisces. Order: Percomorphi. Sub-order: Gobioidæ. Family: Eleotridæ. Genus: *Mogurnda*. Species: *M. mogurnda*.

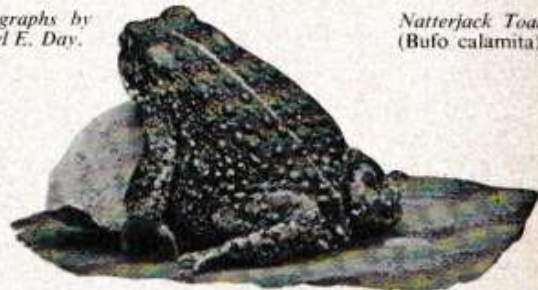
Amphibians and Reptiles of the British Isles

Common Toad
(*Bufo bufo*).



Photographs by
Lionel E. Day.

Natterjack Toad
(*Bufo calamita*).



3. Common and Natterjack Toads

By Alfred Leutscher, B.Sc.

THE difference between a frog and a toad is still a puzzle to some people, who find these little animals hopping in their gardens or down at the pondside. With the British species there need be no difficulty, if the following points are noted. All the three British frog species have moist, smooth skins, longer limbs and stronger webs to their toes. Their heads are more pointed and the colouring is usually brighter. The two British toads, on the other hand, have dry, warty skins, short limbs, a more squat appearance and rounded snouts. The parotid glands behind the head are prominent. The toads are less agile and more nocturnal in their habits.

One of the species, the Common Toad (*Bufo bufo*), is widespread in Britain, occurring on most of the mainland but absent from Ireland. Abroad it spreads through Europe, northern Asia and North Africa. Most Common Toads are of a brownish colour and blend remarkably with their surroundings. Some are yellowish, greyish or an olive shade, and a few are a striking brick-red. The male is smaller rarely exceeding 2½ in., whilst females are about 3 in. long. Sometimes giants occur, measuring as much as 5 in. An Italian specimen I once saw at an aquarist show was so enormous that for a moment I mistook it for the Giant Water Toad of S. America, the largest toad in the world.

These size differences are most marked when the toads are breeding, and occasionally give rise to a remark that a mother toad is giving its child a ride on her back. Needless to say the smaller male is fully mature, and will resist interference when picked up, by protesting loudly with a high-pitched croak and lusty kicks against the intruder's fingers. Because the males are far more numerous in the breeding colonies, there are fights for possession of the females, and large bundles of toads may be seen, where as many as eight or ten little males cling tightly to one hapless female, or each other. She is often killed in the process.*

In the south of England breeding

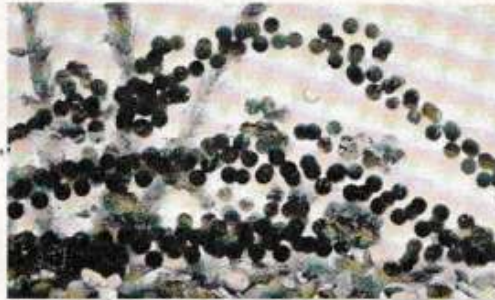
*A warning to fishkeepers. In the absence of a mate, the urge in a mature male or female toad to grip anything is so strong, that it will sometimes grasp and injure, even kill, a torpid fish. All toads and frogs should be removed from a fish pond during spring, and liberated somewhere else. In cases of difficulty or trouble, the author will be pleased to advise.

usually occurs a month after that of the Common Frog, it taking place towards the end of March or in early April. Deeper water is chosen, usually among reeds, which become entwined with the long strings of spawn containing an average of 4,000 eggs. The tadpoles differ from those of the Common Frog by being darker and having a rounded tip to the tail.

In the breeding cycle of this well-known toad there occurs a yearly migration which is perhaps one of the most astonishing acts of Nature performed in this country. It is most particular in the choice of its spawning sites, much more so than frogs, and every spring the creature makes a regular journey to the same spot. Waking up from hibernation, which may have been spent in the ground or in a drain, cave, cellar or woodpile, each toad makes its slow but sure way to the chosen goal. Ditches and other ponds are ignored on the way, obstacles are climbed and roads are crossed, regardless of danger. Bodies are squashed by cars, sometimes in hundreds, where the migration crosses a highway. Little is seen of these journeys, for movement takes place mostly after dark.

Frog and Toad Survey

Interest in this extraordinary behaviour has lately been revived by the British Herpetological Society, which is investigating the problems in its Frog and Toad Survey (see my article in the last issue). By marking toads for future recognition, and by actually following individuals after dark with a torch, it has been possible to follow and map out their routes. It is hoped to be able to publish some



Toad spawn is laid in long double strings (see photograph above). Right: A number of toad tadpoles.



Toads usually select the deeper areas of ponds where grasses and reeds occur.

information on this migratory instinct in a future number of the Society's journal.

Turning to the second species, the Natterjack (*Bufo calamita*), the difference is soon apparent. It is smaller, the warts on the back flatter, the hind limbs shorter, and the colour quite distinct. It is mainly olive to grey-green, with the warts marked in red, brown or green. Along the back is a distinct, yellow stripe. In some places this little toad is called the Sulphur-back or the Running Toad. Instead of hopping it runs over the ground in a mouse-like fashion. "Natterjack" probably comes from the original *nedre*, meaning nether or low-down, and "jack", meaning something small. "Calamita", from Latin *calamus*, means a reed. Natterjacks are fond of breeding in shallow water,

among reeds. This is a protracted affair. They are in the water by March, and spawn may be laid until August, so that tadpoles of all sizes occur. In Britain, May and June seem to be the common spawning months—at least for the south. The calling of the males is very loud, and more of a distinct nocturnal chorus than that of Common Toads.

Natterjack Toads have a scattered distribution in Britain. They seem to prefer dry, sandy places, often in coastal areas, especially in Dorset, Lancashire and Norfolk. They will tolerate brackish water. In the London area their nearest locality is in the Woking district. A well-known colony can be seen, and heard, in the Little Pond at Frensham, Surrey. The Natterjack is a W. European species. Further east it is replaced by the attractive Green Toad (*Bufo viridis*) which has similar habits.

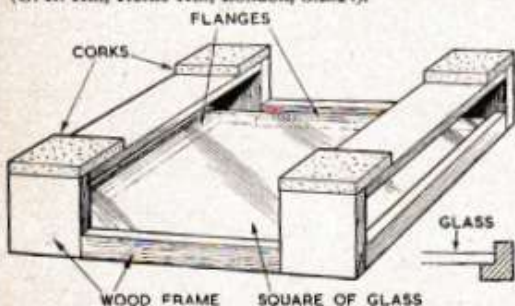
Toads have always been in the unhappy position of being objects of abuse and even fear. Even prominent naturalists, in the past, have had little time for them. One can read in the old manuscripts such phrases as "the most hideously deformed of all creatures" and "objects of disgust and loathing". Toads are only venomous in the sense that their skins secrete a poison under irritation. This is purely protective, so that a slow-moving animal can enjoy a certain degree of immunity from its enemies. In cases where a toad is eaten by other animals the skin is usually removed first. Toad tadpoles are almost always rejected by fish, newts, etc. when given to them as food. The question of a

Readers' Hints and Tips

Floating Frame Feeder

THERE is one stage during the raising of broods of young fish that has caused me considerable concern. It is the time when the fry are feeding at, or near, the water surface. This is, of course, during the first few weeks after they have hatched or, in the case of livebearers, after they have been dropped by the parent fish. Even those fish which must be fed initially on Infusoria will continue to remain close to the surface when they begin to take larger food, e.g., fine dried food and Mikro-worms.

It has been my experience that these types of food quickly drop to the bottom of the tank and remain there ignored by the young fish. Faced with this problem I constructed the floating frame feeder which is illustrated here. The square of glass rests on the wooden flanges as shown. Surface of the water is at the level of the corks.—(G. R. Hill, Herne Hill, London, S.E.24).



Photograph

(S. Crook)

A pair of toads at the grass edge of their natural pond.

toad's ugliness is largely a matter of opinion. It would be as true to say that "ugliness is only skin deep", and there are many animal lovers with great affection for this quaint friendly little creature. Shakespeare has put on record one of the loveliest objects in Nature, "the jewel in a toad's head", meaning the eye.

Most Intelligent Native Amphibian

Speaking from experience I can unhesitatingly recommend the toad as one of the most engaging of small pets. It is certainly the most intelligent of our amphibians, has many interesting habits, and can live with little care and trouble for many years—up to 40 years has been recorded. In the open it eats enormous quantities of insects, and its value need hardly be stressed. It is indeed the gardener's best friend.

Notes for Novices (9)

Rendering a Pond Safe and Selection of Suitable Plants

THE adequate maturing of the concrete forming a newly-made pond is of especial importance. If fish and plants are introduced without this point being considered trouble will result. There are two effective methods of rendering the concrete innocuous. The first consists of applying one of the proprietary products made for this purpose. Most, if not all, have the effect of sealing off the deleterious chemicals and ensure that the water is not rendered poisonous. Some can be mixed with the final layering of concrete; others are painted on afterwards.

The alternative method consists of allowing the dangerous chemicals to escape before the pond is planted and stocked. A sure though slow way is to empty and refill the pond at regular intervals, say once a week, over a two-month period. Prior to each filling scrub the concrete surface to assist the escape of chemicals. This is laborious but most reliable.

However, there is an alternative which speeds up the process and usually proves adequate. The pond is filled with water and after 24 hours a quantity of commercial phosphoric acid is added. Only sufficient should be poured in to render the water slightly acidic (shown by litmus paper changing from blue to red). After a day it will be found that the water is once more alkaline due to chemicals working out from the concrete. More phosphoric acid is added until the water once again gives acid reaction. After phosphoric acid has been added at 24-hour intervals for 4-7 days the water should no longer become alkaline after a 24-hour lapse. As a final precaution allow the pond water to stand for a further 24 hours and test with litmus. If it is not alkaline the pond can be emptied, scrubbed and washed out.

A planting layer is next required. An entirely adequate one consists of a layer (about 3 in. in thickness) of upturned turves, over which is spread a 1 in. layer of shingle. This latter prevents the fish disturbing the soil which would result in clouding of the water. Loamy soil can be used in place of the turves but then a slightly deeper layer of shingle will be required as in the early stages before it has become compressed the soil will be more likely to cloud the water.

Beneath the turves a little well-rotted cow manure can



Photograph]

[L. E. Day

Fine-leaved submerged plant, Hornwort

be laid. Although it may benefit the plants in the early stages such an addition is by no means necessary and might, on occasion, prove harmful. Bone meal is a safer fertilizer but only a thin sprinkling should be included in the turf layer.

Where special compartments for the plants have been built only these need be bedded with the planting medium. Earthenware pots (large flower-pots) with extra holes bored in the sides can be used for the larger plants such as Water-lilies. These ensure that the more delicate plants are not crowded out but in time, of course, pot-planted specimens are bound to show restricted development. Possibly the best way of setting gross-feeders, such as Water-lilies, is straight into the planting medium, which should be twice as deep as in other parts of the pond.

Should there be a marsh area at the border of the pond, but connected by a submerged open brick wall (the construction was described in the last article), the extreme bottom can be layered with drainage material—broken flower-pots, bricks, etc. Above it similar planting medium to that recommended for the bottom of the pond can be introduced, but there is no need for the shingle top layer to be applied as the planting medium will be just proud of the water surface. As the material is added a piece of tiling should be placed over each open space in the inner brick wall. The tile must not seal off the earth from the water entirely but should be at a slight angle to the bricks so that water can flow into the planting medium. The gaps left must not be so large that the soil will escape into, and cloud, the pond water.

Wild Plants Not Recommended

Obviously the most desirable source of plants is either a commercial supplier of pond plants or the pond of a fancier-friend. In this way the likelihood of introducing predatory creatures or disease is remote and no more than a 20-minute submersion in potassium permanganate solution (dark pink in colour) should be necessary before the plants are placed in the pond. If it is desired wild plants can be introduced but there is some risk even after disinfection. In addition wild plants do sometimes show a tendency to



Photograph]

[L. E. Perkins

Three Water-lilies for garden pools. Left, *Nymphaea Marliacea chromatella*; centre, *N. James Brydon*; right, *N. Sunrise*.

grow rampantly. Without periodic pruning they will stifle choicer subjects in the pond.

If, for reasons of economy, it is decided to use wild plants they should be subjected to the following disinfecting procedure which will make reasonably certain that harmful elements do not gain access to the new pond. First allow running water to flow on the plants for several hours. This will remove the larger organisms and the mud. Next place them in either a solution of household ammonia (two tablespoonfuls to a gallon of water for $\frac{1}{2}$ hour) or a solution of Dettol (four teaspoonfuls to a gallon of water for two minutes). After this treatment the plants should be thoroughly washed. As a final precaution they can be subjected to a 20-minute immersion in dark pink potassium permanganate solution. The plants will no doubt appear somewhat limp after these treatments but they should recover in a short time when planted in the pond.

Bunches of submerged plants can be pushed into the planting medium. If they show any tendency to float up they can be anchored to a stone. Plants with well-defined roots, *Vallisneria*, *Sagittaria*, Water-lilies, etc., should have their roots well spread out and, if necessary, anchored with stones. Over- rather than under-planting is desirable. The more plants there are in the pond the shorter will be the time when the water is cloudy and then green. In the first few weeks this invariably occurs. First there is slight milky clouding (due primarily to bacteria) and then a green (caused by algae) appearance. This is a period in the maturing of a pond but the more pond plants there are the sooner will the effect of their ascendancy be apparent and, when it occurs, the greenness of the water will diminish and the submerged plants will flourish.

Many of the submerged plants suitable for introduction to ponds have already been described in this series as aquarium subjects (page 136, June-July 1952 issue) so their characteristics need not be gone into fully here.

Although somewhat ousted from first place by the *Elodeas* and *Egerias*, the Tape-grasses, *Vallisneria* and *Sagittaria*, are nevertheless popular. *Vallisneria spiralis* will grow in a water depth of 9-12 in. and var. *tortia* has somewhat shorter leaves so should be in the shallow depth. *V. spiralis* var. *gigantea*, the Giant *Vallisneria*, bears leaves up to 3 ft. in length and 1 in. in width. A greater water depth can therefore be utilised. Several of the *Sagittaria* species are suitable for ponds. They are of interest as some bear three differing shapes of leaves, those which are submerged and strap-like, those which float and are more rounded and those which grow well above the water surface and are arrow-shaped. One species which develops these three leaf types is *S. sagittifolia* var. *latifolia*. It will grow up to 4 ft. in height and small white flowers are produced. *Sagittaria natans* and *S. sagittifolia* var. *sinensis* are two types used primarily for underwater vegetation.

Egeria (Elodea) densa has whorls of bright green leaves whilst *Elodea canadensis* resembles it somewhat in general appearance but has serrated leaves and tends to get out of hand very quickly. *Elodea crista (Lagarosiphon major)* has leaves not dissimilar to either of the previously mentioned species but they are curled inwards, are larger and borne in broken whorls. All grow best in water 12-18 in. deep.

Among plants with finely divided foliage giving a feathery appearance is Hornwort. This subject has rigid but brittle

stems on which are whorls of much-divided leaves. The most likely species is *C. demersum* and it has dark green colouring. Water depth can be from 6-24 in.; in fact the plant grows quite well for a time when free-floating but rooting in the planting medium should be encouraged. Several species of *Myriophyllum* (Water Milfoil) will take well to a pond existence. They have finely segmented underwater leaves giving a hair-like appearance. Water depth can be from 6-18 in.

The *Potamogeton* Genus has a number of species native to this country but care should be taken when introducing them to a pond as growth is rapid. An attractive species is the Curled Pondweed (*Potamogeton crispus*), the leaves of which are semi-translucent, crinkled at the edges and 3 in. in length. The plant can be set in water depths varying from 9-15 in.

Water-lilies offer a bewildering selection to the novice pond-owner but extreme care should be taken that the particular variety chosen is suited to the depth of water in

the pond. It should also be remembered that one plant, intended to be set at a 24 in. depth, will cover up to 7 sq. ft. of water surface with its blooms and floating leaves. A little shade from Water-lily leaves will be beneficial to the fish but excess will adversely affect the submerged plants. Therefore only a moderate number of Water-lilies should be included. Two plants of the medium-sized varieties are ample for a 6 x 4 ft. pool.

Where the pond is large (2½-3 ft. water depth) *Nymphaea alba* is an obvious choice. As its name implies it bears white blooms. Another large subject flourishing at a similar depth is

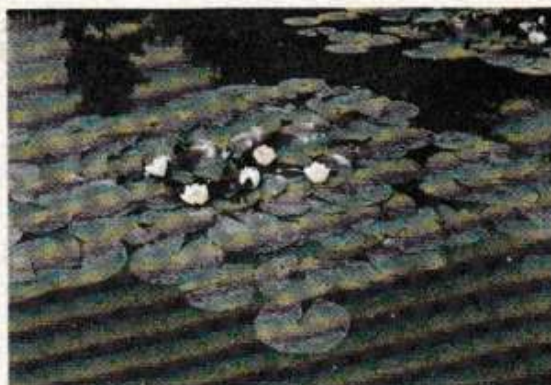
N. Colossea. The flowers are pinkish but become white after a time. *N. Gladstoniana* has flowers of cup-like shape which are white. Its water depth is also 2½-3 ft. Two further varieties for large ponds are *N. Attraction* with ruby-red flowers and *N. Picciola* with crimson blooms.

Next we can consider types most suited for the deeper areas of average garden pools (water depths from 18-24 in.). An established favourite in this division is the *N. Escarboucle*, which produces a profusion of crimson blooms. Another red-variety, this time of a carmine hue, is *N. James Brydon*. It will flourish in semi-shaded areas. Among the high quality *Marliacea* lilies is *N. Marliacea chromatella*. This variety has yellow blossoms and russet-spotted foliage. *N. Darwin* produces flowers that are red, splashed white.

Rose-pink Colouring

Another variety where the name gives away the colour is *N. Rose Nympe* which carries flowers of a full rose-pink. The blooms of *N. Sunrise* are pale yellow when breaking from the bud but have a strong yellow colour when fully opened. Foliage is spotted with brown. *N. Virginalis* has well formed white flowers.

For those ponds where Water-lilies can only be catered for in water depths of 12-18 in. the following species-form a fair selection. *N. Albatross* has large white flowers whilst *N. Andreana* bears reddish-yellow blooms. *N. Esmerelda* has variegated blossoms. The ground colour is light rose but this is heavily overlaid with a deep rose. With wine-red flowers overlaid lightly with white *N. Laydekeri purpurata* has established itself as a popular variety. *N. Graziella* is free-flowering, its blossoms being copper-yellow and the foliage variegated.



Photograph]

[H. Bastin

One of the hardy white Water-lilies, *Nymphaea alba*.

Current Research

Breeding Behaviour of Male Sticklebacks

By Alastair N. Worden, M.A., B.Sc., F.R.I.C., M.R.C.V.S.

THE breeding habits of Sticklebacks, with the active parental rôle of the male, are a matter of common interest, but some 20 years ago critical scientific study indicated that there were many gaps in our knowledge. Since 1934 the reproductive behaviour of the Three-spined Stickleback (*Gasterosteus aculeatus* Linnæus) has been the subject of research in the Department of Zoology of Leiden University. From time to time fragments of this research have been published, and now one of the workers concerned, Dr. J. J. A. van Iersel, has produced a detailed account in a special supplement to the international journal *BEHAVIOUR* (Supplement III, 1953, pp. vii + 159).

In Holland breeding takes place at the end of March and the beginning of April, whereas in England the reproductive period begins later in April (A. Craig-Bennett, 1931, *Phil. Trans. Roy. Soc. Lond. B.* 219, 197-279). Migrating schools are always comprised of fish of the same size, but the earlier schools consist chiefly of males. Some males develop pale nuptial colours during migration, whereas most develop them during the next phases, which consist of outbursts of "fluttering" alternating with the first stages of nest-building and aggressive activity (schooling gradually becoming rarer), cessation of fluttering and the full development of aggressiveness and nest-building. By the time the behaviour change is complete the male has developed to the full intensity. There are, however, great individual variations and, whereas some almost uncoloured males may show intense building activity, some with colours fairly well developed start their building behaviour slowly.

"Fluttering" which is the name given to the persistent swimming movements against the glass side of the tank is regarded as true migratory activity and it may be induced in mid-winter by the injection of male sex hormone. Crowding of male fish can prevent them from proceeding to the next stage, at least during the earlier part of the nesting season. The presence of one or two other companions, however—not necessarily female—has the reverse effect. It has earlier been shown in Cichlids that the stimulation from the companion may be purely a visual one (L. R. Aronson, 1948, *Trans. N.Y. Acad. Sci.*, 11, 33-42).

Territorial Defence

The fighting behaviour of male Sticklebacks is itself of considerable interest and is of course closely related to the possession and defence of territory. A fish hotly pursued by another will, on reaching its own territory, turn on its opponent—which in turn will then flee. Sometimes what is termed "spine fighting" develops, in which two males of about equal strength will pursue one another rapidly, in a circular movement. The dorsal spines and the ventral spine nearest to the opponent are erected. Each male appears to be restrained from biting, and it is believed that the tendency to attack and the tendency to flee are at work simultaneously.

Having established a territory the male builds his nest, commencing by digging for sand, searching for, fetching and testing nest materials, and gluing these together with the aid of a substance secreted from the posterior part of the kidney. Castrated males show a degeneration of the cells that produce the gluing substance. Various other operations, such as pushing with the snout, sucking and boring, are employed in the construction of the nest, and at the completion there is a special wriggling movement through it in order to form a definite tunnel with an exit.

This creeping movement marks the end of nestbuilding and the male is now ready or virtually so to commence courting a female. Nestbuilding occupies from as little as four hours (even one hour has been claimed under British conditions) in the case of males with a high "nestbuilding drive" to one, or even several days, in some instances. Normally the time taken is five to six hours.

The nest consists of a platform of material on top of which the tunnel is constructed. It has a well-defined entrance, which van Iersel believes is an essential factor in bringing the male into the courtship phase. The whole structure lies in a pit and has a length of about two inches, although the size may vary between wide limits.

Ventilating the Eggs.

Towards the end of nestbuilding the male may show the "fanning" movement that it normally employs later for ventilating the eggs. Earlier observers have believed that the function of this early fanning is the removal of loose material from the nest, but van Iersel has never seen a male paying attention to loose material, however violently it was moved by the fanning stream. He believes that it is what is known as a "displacement activity", and his experimental studies on this and the later stages of reproductive activity, with their clear demonstration of the relationship between the various behaviour drives, will be discussed in the next contribution of this series.

Suburban Garden Pool



Photograph

R. E. Groves

This pool is in the garden of Mr. W. A. Crawford of West Dulwich and measures 6 ft. long by 5 ft. at its widest point. Depth in the centre is 3 ft. 6 in., whilst shallows round the edge vary in depth from one to three inches. The statuette, which stands in the shallow water, is a simple metal figure bought from a secondhand shop for a few shillings and painted a stone colour. The miniature house on the right was built to shelter the pump which works a fountain.

Daphnia—A Staple Food for Fish

Collecting and Culturing Suggestions

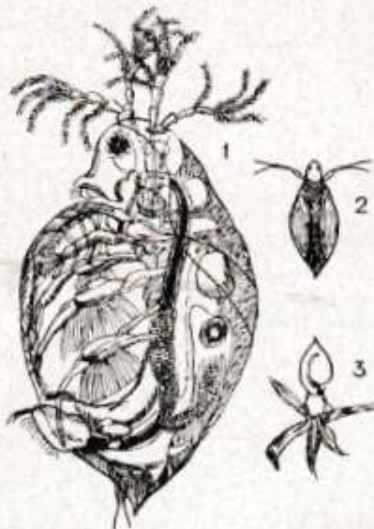
By W. Bunting, F.R.E.S.

THE small Water Fleas, *Daphnia*, and their near relatives are exceptionally good food for fish, certain tadpoles and the larger aquatic insects. In the summer months this livefood is obtainable from most ponds, but to ensure a supply throughout the year it is necessary to culture them by one of the several methods described here.

Daphnia are Crustaceans, and belong to the Sub-class *Branchiopoda*. The name Water Flea is appropriate as it is descriptive not only of their jerking movements but also their appearance of an "insect in a shell". The carapace, or shell, is very fine and if the *Daphnia* is examined through a microscope the whole of its internal anatomy can be seen, as shown in Fig. 1. Fig. 2 shows the shell partly open.

Daphnia occur in many different kinds of freshwater habitats, different species occurring under different conditions. During the summer the rate of reproduction is very rapid and the female *Daphnia* retain their eggs until they hatch, the size of the broods varying from ten to twenty young. The young undergo a series of larval moults before becoming mature. Maturity under favourable conditions is attained in 10-14 days. When winter approaches, *Daphnia* lay winter eggs, which do not hatch until the following spring.

The equipment needed to collect *Daphnia* is a short-handled net, one with a simple wire frame. The net should be made of a fine material such as bolting silk, or book muslin. A container for the captured specimens is also required. A net made with bolting silk retains a larger catch, but also collects many other forms of life, some of which may be harmful. A net with a larger mesh, such as



1. Enlarged sketch of *Daphnia* showing its structure. 2. *Daphnia* with valves open. 3. A *Daphnia* resting on a plant.

book muslin, only retains the larger specimens, which makes it easier to sort out the catch, and so eliminate any unwanted creatures such as *Hydra*, mites and beetles. The most suitable locations are usually ponds where there is a dense growth of water plants. Clear the plants from a number of places, areas of about 4 ft. square are satisfactory, and then these places can be used regularly. When dipping, place the head of the net completely under water and sweep with a steady figure-eight movement to make a good catch.

When culturing *Daphnia* do not use a container made of, or incorporating, galvanised metal or copper. These metals, zinc and copper, are poisonous to *Daphnia*. Tanks made of wood are most suitable.

If tap water is used allow it to stand for at least twenty-four hours. Should this water be highly chlorinated, or heavily treated with chemicals of any kind, use freshly-collected rain water. It is not advisable to use pond water, as creatures harmful, not only to *Daphnia* but also to any fish fry which one might be rearing, could be introduced.

The essential foods for most forms of *Daphnia* consist more of bacteria and single-celled animals than algae, although some forms do eat these latter. To provide suitable food there are many formulae from which to choose and the choice and application is best found by trial. First of all use weak solutions and increase the amounts until the most suitable is found for each individual culture.

STABLE TEA. Use equal proportions in bulk of horse manure (about a week old) and well-worked garden soil placed in a linen bag (a flour bag is ideal) and suspended in a bucket of water for a few days. Keep in a cool place and take the bag from the water allowing it to drain thoroughly before removing it out.

YEAST WATER. One ounce of yeast to a quart of water has been used for a culture tank of about two gallons. The addition is repeated every fifth day or as necessary.

SHEEP MANURE, RABBIT AND CAVY DROPPINGS. These materials (dry) suspended in a small linen bag, may be introduced to the culture tank.

LETTUCE, WHEAT OR HAY INFUSIONS can be used in the same way as has frequently been described for the culture of *Paramecium*. The strength of the infusion should be in proportion to the size of the culture.

In all cases a change of diet is advantageous and, at times, small amounts of animal flesh may be used, but not in sufficient quantities to foul the water.

The water temperature should not fall below 40 deg.F. or rise above 80 deg.F. The maximum rate of growth occurs at temperatures of 65-75 deg.F.

When a continuity of supply is required it is advisable to have at least three cultures.



Photograph [Keystone] "Broadlands", the home of Lord and Lady Mountbatten, with a large pool, trim lawns and evergreens in the foreground. It was at "Broadlands", in Romsey, nr. Southampton, that H.M. The Queen and H.R.H. the Duke of Edinburgh spent part of their honeymoon in November, 1947.

Variation in Goldfish

3. Effect of Age on Body and Fin Shape — Variety of Fish from the Same Spawning — Outline of the Head

By R. J. Affleck, M.Sc., M.R.S.T.

IN the first article of this series we discussed and listed the extreme forms of body, fins, etc., that are found in British Goldfish. Let us now consider some of these shapes in a little more detail, but before we start, it will be as well to make a few points clear.

Depicting the Fish

10. ILLUSTRATIONS. (a) The illustrations in the first part of this series (February-March issue, Figs. 1-7) are mere sketches, drawn without reference to any one particular fish or to measurements obtained from real fish. They were then copied by this journal's artists and from the results printing blocks were made. (b) Figs. 14-16 are accurate outline drawings from fish. Critical lengths along the body of each were measured and then, referring to a base line, measurements of the depths were taken (approximately 40 from each fish). Although the outlines are accurate, no attempt has been made to draw fin rays, scales, etc., or to shade the body to give an impression of roundness. (c) Illustrations from the Goldfish Society's Booklet No. 2 (see page 72 of the last issue) have accurate outlines and the bodies are shaded. Such a method of illustrating fish standards has the advantage of emphasising the body (which is a very solid structure) compared with the filmy fins. (d) Photographs do not necessarily give a perfect impression of the shape of a fish unless the fish was parallel with the lens when the exposure was made. If it is not parallel, then the depth of the body may appear correct but the length will be reduced on the print and the whole fish will appear to have a deeper body than it really has.

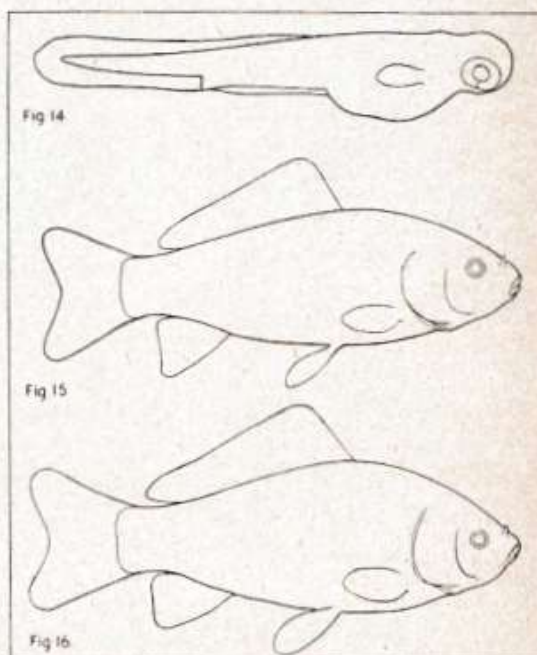
Changes in Shape of Wild Specimen

11. SHAPE AND AGE. Figs. 14-16 show changes in shape which occur during the lifetime of a wild-type fish. Fig. 14



14

shows a specimen three days old so that the pectoral fins are the only ones that have developed and the fish has not even a real caudal fin. The fish in Fig. 15 is approximately fifteen months old and just over three



15

16

inches long, while the adult (Fig. 16) is six years old and 6½ in. long. If the depths of bodies (D), lengths of caudal fins (C), lengths of dorsal fins (Do) and lengths of anal fins (A) are compared with the lengths of the bodies it will be seen that both the lengths of the fins and the depth of the body increase with age.

	D/L	C/L	Do/L	A/L
3-days	0.19	—	—	—
15-months	0.34	0.24	0.17	0.19
6 years	0.38	0.26	0.20	0.21

In fancy varieties with deep bodies and long fins the relative increases in size are much greater.

One of the leading breeders once showed me a Shubunkin which was a real "Draggletail", yet he informed me that



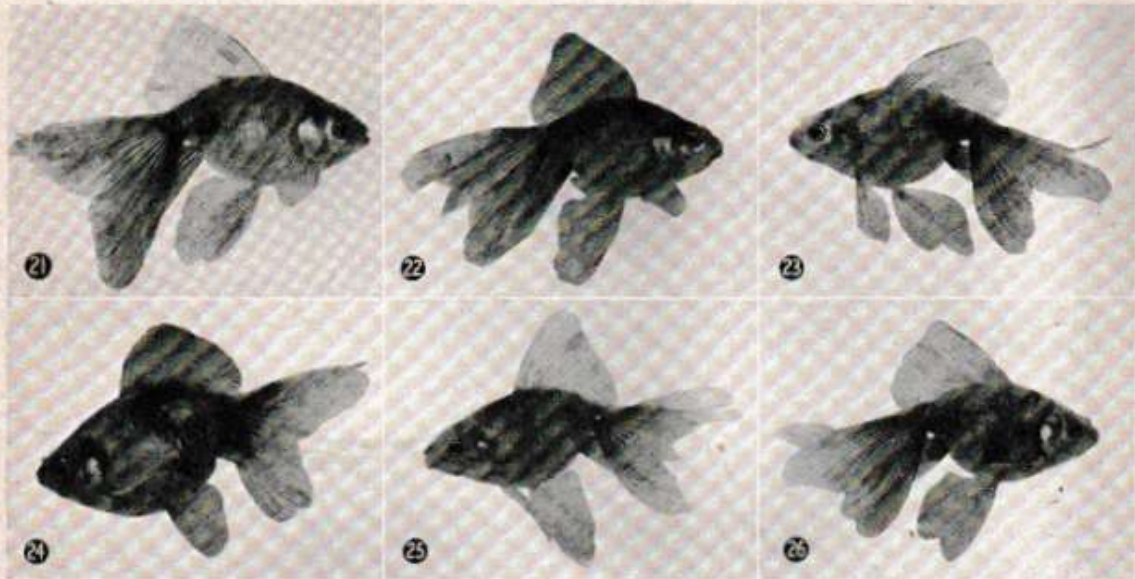
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18



19



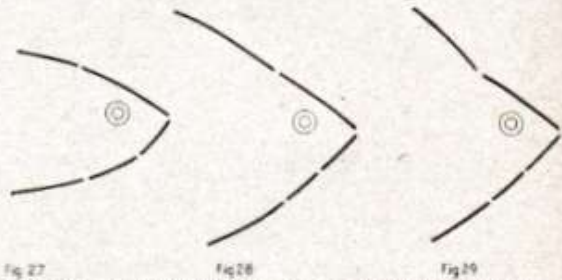
Photographs for Figs. 17-26 by L. E. Perkins

it won first in the previous year at one of the premier shows. Because of these variations with age it is essential when making a drawing of a standard fish to state the size of the specimen concerned, especially with slim-bodied varieties. A good judge will then be able to make allowances for fish that are slightly larger or smaller than that depicted in the standard. If no such information is given then the judge may give an award to a small fish which, when more fully grown will be a very poor specimen.

Body Shape of Twintails

12. VARIATION IN BODY OF TWINTAILS. The photographs (Figs. 17-26) show variations of body shape in specimens from the same spawning. Although the finnage and colour is good in many of them only 17, 18 and 20 should be considered as parents.

When looking at good fish with short/deep bodies note that the head is always a projection from the trunk. In the case of a long-bodied fish the head forms the front of a



Figs. 27-29 show the head outlines of a Common Goldfish, a good-class Twintail and a fish with a humped back.

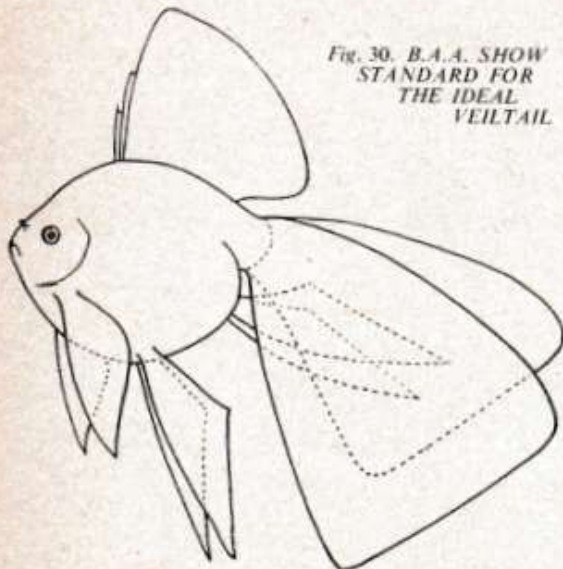
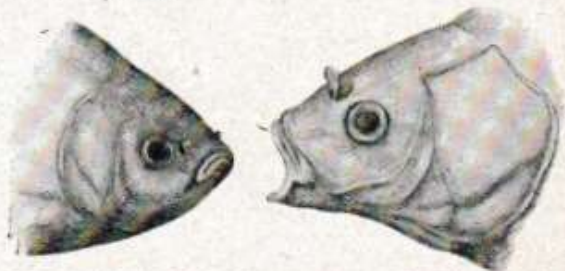


Fig. 30. B.A.A. SHOW STANDARD FOR THE IDEAL VEILTAIL

Issued in 1931 as one of the original British Goldfish standards.

stream-lined form. The main differences are shown in Figs. 27-29. The first is a Common Goldfish, the second a good Twintail, while the third is a humped-back fish. It will be realised that the old B.A.A. illustration of a fish with a "round body" is an impossibility (Fig. 30).

The sketches (Figs. 31 and 32) show some of the superficial bones in the head of a Goldfish. The shape of the head is not likely to be affected by feeding but in the trunk region it may make all the difference between a good and an excellent specimen.



Figs. 31 (left) and 32 (right) are drawings by the author in which the superficial bones of the Goldfish's head are indicated.

Three Predatory Insects

Great Diving Beetle and Two Species of Water Scorpion

— By —

A. Laurence Wells,
F.R.M.S.

THE *Dytiscidae* Family—the Diving Beetles—is represented in this country by about 120 species which range in length from $\frac{5}{8}$ –1½ in. They are the most generally known form of water beetles, the particularly familiar species being the Great Diving Beetle (*Dytiscus marginalis*).

Almost every pond has its quota of these beetles (they are not very partial to moving water) and they will invade without warning the small ornamental pool in the garden where they can be both a nuisance and a menace. Size for size there are few other aquatic animals so rapacious or voracious as *Dytiscus*. Small fish, frogs, newts, snails—all are grist to this beetle. When creatures swift of movement are selected as food the beetle can dive like a plummet on to them.

Body Shape Well Adapted

As will be seen from the illustration the body is ideally designed for diving, swimming and progressing through the dense masses of water plants, cracks in logs and under stones. The colour of the adult is a rich, dark chestnut with, in *D. marginalis*, a yellow stripe bordering the thorax, wing cases and the front of the head. When a *Dytiscus* wishes to breathe it floats to the surface with its tail-part uppermost and this is thrust through the surface film. To the rear extremity are two spiracles which inhale air; at the same time the wing covers are slightly raised, thus allowing the felt-like mass of hairs that cover the back of the abdomen to be aerated. The air is thus retained in a bubble, or series of bubbles, and is utilised by another and smaller pair of spiracles situated behind the other pair.

The hind legs are used for swimming. They are quite wide, fairly flat and liberally fringed with hairs. When the backward propellent stroke is made the breadth of the legs opposes the water but when the return stroke is made resistance is reduced to a minimum; the leg swivels round so that the narrow edge faces the water and the hairs fold up.

Dytiscus is a very "touchy" creature. For example, when it is alarmed a yellowish fluid is emitted from the base of the abdomen and this has a strong ammoniacal odour; when handled a white fluid with a smell strongly reminiscent of sulphuretted hydrogen is ejected. Moreover, it is "touchy" about the weather. On rough, boisterous days it sinks to the bottom of the pond, but as the weather improves higher levels are sought until, on fine still days, it will climb



Left: Female Great Diving Beetle (*Dytiscus marginalis*). Adults measure about 1½ in. Top right is an enlarged picture of a female beetle's wing-case showing the grooves which are a sex character.

out of the water and bask on the leaves of aquatic plants exposed to the air. During the more severe part of the winter this beetle will bury itself in the mud on the bottom. At evening time the beetles take to the air and may fly away. In separate aquaria they make most interesting subjects.

The male is readily distinguishable by the suckers on its forelegs, their function being to hold the female at mating time. The pair swim about, sometimes for an appreciable time, before the female, who is the larger, is released. The eggs are deposited at the end of March or early April, one or two at a time, in incisions in the stems of the succulent plants such as *Potamogeton natans*. After about three weeks the larvæ emerge from the eggs. They grow quickly and after several moults over five months attain their full size when lengths may be nearly two inches.

They then become restless, following voracious feeding, and endeavour to crawl out of the water to pupate in the mud of the pond side. Those pupating early in the year may develop into adults within a few weeks, otherwise they remain in their circular cell in the mud until the following Spring. The larvæ have no real oral opening and feeding is by suction only. Sometimes a fluid is injected into the victim which reduces it to a fluid state.

The elytra of the adult female differ from those of the male. In the male they are quite smooth but in the female they are furrowed or sulcated.

Water Scorpions

The Order *Hemiptera* contains the Pond Skaters, Water Boatmen and the Water Scorpions. They are true "bugs", the mouth parts being constructed only for sucking. They pierce the skin of their victim and extract its juices. The Sub-order *Heteroptera* contains the aquatic species. The two species covered here are Water Scorpions belonging to the Family *Nepidae* and are, incidentally, the only



Photographs (L. E. Day)
Long Water Scorpion (*Ranatra linearis*) with its breathing spine at the surface.

British representatives of the Family. They inhabit still or sluggish water and are considerably larger than the other members of the *Heteroptera*. They are ruthless, not to say wanton, killers and almost any creature that can be held in the powerful fore-legs will be attacked and, with perhaps only half its juices extracted, cast aside. Superficially, the two species do not look very similar but they have, however, the necessary affinities to make them closely related.

The Long Water Scorpion or Water Stick Insect (*Ranatra linearis*) is a sluggish, indolent creature that prefers to lie in wait for its unsuspecting victims. On land it walks slowly and hesitatingly, the body perched high on the second and third pairs of legs. Also it will fly on occasion, with the rather odd result that it may have difficulty in getting back into the water. Most of its relations are extremely light and rarely penetrate the surface film, in fact often they walk over the water with their feet actually denting the surface without breaking through it. After flying *Ranatra* is dry, consequently it often has to lash around with its legs to pierce the surface. In the water it will remain stationary for hours, looking just like a small twig, waiting for an unwary creature. Sometimes it will crawl over the leaves and stems of plants or swim by means of its own peculiar method of driving backwards with the third pair of legs and forwards with the second pair, a scissor-like action that seems to satisfy the performer.

The fore-legs are used for grasping the living food.

The length of an adult may be three inches with a width of only $\frac{1}{4}$ in. The colour is greyish. Eggs are laid in crevices in water plants and have two terminal projections.

The Water Scorpion (*Nepa cinerea*) is a dull greyish-black insect with a flattened body, the whole appearance being that of a dead leaf. This illusion is heightened by the incrustation of mud and minute detritus collected as it grubs about in the mud. The underside, however, is quite colourful, being a bright scarlet, a feature also of *Ranatra*.

From the tail of both species a long spine projects and this is thrust through the surface film into the air for breathing purposes. The breathing apparatus of *Nepa* is a complicated affair altogether and it seems that the tracheal system traverses the entire body with an intricate maze of minute air-tubes. Ordinarily it is a sluggish creature and rarely engages in swimming but prefers to crawl about the bottom and climb up the water plants when coming up to the water surface in order to breathe.

The eggs are oval, much less elongated than those of *Ranatra*, and are laid in strings, each egg having at one end seven tiny projections or filaments into which the succeeding egg fits. Once the eggs are laid these filaments bend backwards thus separating them, and form a circlet of recurved hooks.

Nepa is really a common insect, yet it will not be found in every pond. *Ranatra* is becoming a very localised insect and is rarely seen in the south.



Photograph

L. E. Day

Water Scorpion (*Nepa cinerea*), showing its flattened dull greyish-black body and long posterior breathing tube (left).



Pond Collecting Equipment

By John Clegg, F.R.M.S.

No. 9
Carrying
Container

Photographs by the author

EVERY pond-hunter has his own way of carrying his impedimenta; some merely bundle the nets, tubes and the rest into an old haversack while others make or have made elaborate carrying boxes into which each item can be clipped.

The illustration, right, shows the carrying tin favoured by the author. It consists simply of a deep tin box provided with a carrying strap to be slung over the shoulder. At the bottom of the box is a strip of thick rubber sheeting which has the dual advantage of minimising shock to the glass equipment and keeping water away from the tin.

In the box, the net (on the right), draghook and its length of cord, and a number of 3 x 1 in. glass specimen tubes can be comfortably stored. In the lid, leather straps riveted to the tin hold smaller items such as a weed-hook to screw on to the collecting stick; a pair of scissors for cutting off small pieces of weed containing interesting specimens; forceps; small glass pipette and an ivory ruler for taking measurements on the spot.

The actual pieces of equipment will vary, of course, with the type of specimens for which a search is being made. Thus small screw-topped jars would replace the specimen tubes if larger creatures, and not microscopical specimens, were being sought. A hand-lens and a few small tins in the pond-hunter's pocket would, of course, be essential items on any pond-hunt and it is a great convenience if the lens has a long piece of string or cord attached to it with which it can be slung from the neck at the pondside. This saves frequent searching for it (with wet hands) in the pocket when interesting finds are made.



African Clawed Frogs (*Xenopus laevis*)

Strange in Their Ways Yet Easy to Keep

By Viscountess Bury

AMONG the strange creatures that can be kept as pets are the Clawed Frogs of Africa. They belong to the Class *Amphibia* (Order *Salientia*).

For those who like Amphibians, such as frogs, toads, newts and salamanders, they could not find a more interesting species to study, or one which gives so little trouble.

The Order *Salientia* comprises nearly fifteen hundred species of frogs and toads, the Clawed Frog being one of the *Xenopus* Genus, members of which are tongueless.

The Clawed Frogs have five toes in their webbed hind-feet which resemble those of the frogmen of the second World War. The webs have red veins running through them, and the three inner toes are tipped with black horny sheaths, like claws, hence the name. The front feet are quite different in shape. They are formed like a hand with four long tapered fingers and are not webbed.

Colouring of the Creature

The body is olive-green in colour, with specks of mottled black across the back. The underneath part is pale grey, almost verging on white.

Some time ago they were not considered a hardy species, but it is known now that they will thrive in an outside garden pool. They were also supposed to be entirely a water inhabitant, but again they have been known to crawl out of one pool and into another.

They breed very prolifically, laying about a hundred eggs



Photograph [G. J. M. Timmerman] Underwater picture of *Xenopus laevis* showing the dark dorsal colouring and webbed hind feet with their three black tips, which are attached to aquatic plants. The tadpoles have long feelers at the angles of the mouth and these grow to a length equal to that of the head and body.

The courtship, or mating, of these Batrachians is most interesting. The males, far smaller than the females, seize their mates in a close embrace which lasts for several weeks. Eventually she lays her eggs which are immediately fertilised by the male frog.

In medical laboratories the Clawed Frogs are used extensively for pregnancy tests.

I have a pair of these frogs and they live in an aquarium of orthodox shape, 16x12x12 in. They are very graceful swimmers but, being rather rapid in their movements, they are apt to uproot the plants in the tank.

The proprietary forms of Sea Cypress (page 135, June 1952, WATER LIFE), are ideal for decorating the tank. The base of each bunch has a ring of lead around it which makes it sink to the bottom of the tank so no planting in the shingle is required. Even when the frogs are swimming rapidly they merely push the Cypress out of the way doing no harm, whereas the ordinary aquatic plant would be uprooted.



Photograph [L. E. Day] Clawed Frog with the whitish underparts clearly visible.

In my aquarium there are several rocks which the frogs seem to like, and after a rather large feed they squat behind them. Apart from being necessary for their well being the rocks greatly add to the appearance of the aquarium, especially if they are well grouped and attractively shaped.

The Clawed Frogs are carnivorous, and their food consists of mealworms, shredded raw meat, Earthworms or pieces of raw fish. They are very ready feeders, and it is most entertaining to watch their strange antics as they cram their mouths full of food. They seize a morsel in their mouth and start ramming it in with their long tapering fingers. They are rather like greedy children who have forgotten their party manners! Very often they blow the food out again and then swoop on it with renewed zeal.

My pair of frogs live in their tank, which is full of water, all the time. It is advisable to change the water once a week in case any uneaten food gets left behind in the shingle and rots. Immediately remove any pieces of meat which have turned white. The frogs come to the surface from time to time and are apt to jump out, but this is a rare occurrence and usually happens if they have been frightened. It has only happened to mine once, and that was because I had them in a very shallow aquarium. A tin lid, bored with holes, can be put over the top of the aquarium for safety and then there can be no danger of this happening.

They are a very interesting species to study, and like all the Family *Pipida*, to which they belong, they have no eyelids or tympanum. They make fascinating pets and hours can be spent watching their strange and weird performances.



X. laevis tadpole in a quite early stage of metamorphosis.

Hungry Aquarium Inmates

Successful Spawnings from the "Aquarium Billy Bunter" (*Cichlasoma nigrofasciatum*)

CICHLASOMA NIGROFASCIATUM, a member of the Cichlidae Family, has quite recently become very popular with British aquarists, even though it enjoys a rather unfortunate reputation so far as pugnacity is concerned, which, my experiences have shown, it does not always deserve. One thing must be made clear though, there are rogues in every phase of life and this species of Cichlid has probably turned out quite a few in the past, hence its present reputation. It should be pointed out that adults must be separated after spawning as incidents may occur as I shall show.

During October last I acquired four young Nigger Cichlid specimens, as *C. nigrofasciatum* were called then and as I still prefer to call them now. These fish were six weeks old and it was impossible to ascertain their sex. They grew rapidly and attained the overall length of two inches by January this year. One fish was $\frac{1}{2}$ in. or so longer than the others and a rather dark grey in colour, striped with black vertical stripes. It proved to be the only male of the four, and at that time his fins differed in no way from those of his sisters. They all appeared to be of the same length, colour and shape.

On January 4, it was noticeable that the male had selected his mate, for he was continually driving the other two females away from his chosen spouse. All three females had developed rather full bodies and had a pink background to their stripes in the lower region. On January 5, I removed the two spare females from the tank; this tank incidentally measured 18 in. long, 9 in. wide and 12 in. deep, but only contained water to a depth of nine inches, at a temperature of 75 deg.F.

On the evening of January 11, the Nigger Cichlids spawned on the inside of a flower pot I had placed in the aquarium and there appeared to be about 40 eggs. The female stayed inside the pot, obviously fanning them. When I dropped food into the tank, the male went into the pot and the female came out to feed; when she had eaten enough she returned, and the male came out for his fill.

Parental Duties Taken Over by Male

This also occurred at intervals during the day when the female would grub around the bottom for food. The eggs were now transparent and none appeared infertile. On Friday, January 16, the eggs hatched and were shifted by the parents to the far right-hand corner of the aquarium, on the gravel which had been cleaned by the parent fish. They had worked hard in cleaning this gravel. I did not actually see them, but the rest of the tank was covered in thick mulm. The following morning, January 17, there seemed to be too many fry for the parents to keep under control so I removed both parents. They were beginning to weary of keeping the fry together in the corner, and seemed likely to eat them. On January 18, the young fish were all over the tank, wriggling through the mulm, and approximately three times their size at hatching.

It took until January 23 for the fry to become free-swimming, that is five days for the eggs to hatch, and seven for the young fish to become free-swimming. Each day they received Mikro-worms and finely-screened *Daphnia*, five times a day and sometimes six. They appeared to have enormous appetites, and I could not get enough *Daphnia* for them. Fortunately I then had seven Microcults going and was supplementing livefood with Farex.

By February 1, the fry were eating cut-up White Worms, and I raised the water level to 10 in.

On February 9 they were consuming cut *Tubifex* and whole White Worms as the Mikro cultures had proved insufficient at this stage so I stopped using this type of food. On February 18, whole *Tubifex* worms were eaten, and these and Bemax made up their diet from this time on. My original guess of 40 proved to be a gross underestimate, there were over 100, and on February 21 I put 56 into a 24 x 12 x 12 in. aquarium, 55 into another 24 x 12 x 12 in. one, and 6 into my community tank where they are to the day of writing (April 7), and measure $1\frac{1}{2}$ in. body length.

Eggs Laid the Same Evening

On January 24, I loaned the male fish to a friend who had a female of the same species. During the same evening his female fish spawned on a flat stone, and, as she laid the eggs row by row, my male fish followed, fertilising them. These same two fish, at a later date, spawned in a 36-in. tank containing 40 Jewel Fish, and kept all 40 Jewels at bay while the eggs hatched. What happened after they hatched I have yet to enquire.

On February 2, I borrowed a male fish from another aquarist and put it with two females in another 18 x 9 x 12 in. tank, this time with 12 in. water depth. Two fish mated, and I placed two flower-pots in the aquarium. On February 4, they had spawned inside one pot, and had dug a deep recess in the compost behind both flower-pots. The eggs hatched on February 8, and the young fish were promptly moved by the parents to the second pot. On the following day the fry were moved by the parents into the recess behind the pots. This moving of the fry occurred every day until the fry were free-swimming. They were moved, from one pot to the next, and then to the recess in a cycle of events.

On Friday, the 13th, the other adult female was attacked and badly torn by the parents of the fry. I rather belatedly removed her, but she died. The same day the fry were scooped up by the parents and blown on to the sides of the aquarium in the far left-hand corner, at the top, where they remained quivering until they finally became free-swimming. Every evening at dusk, the parents collected their fry from all parts of the tank and "put them to bed" in the recess. On March 1, the male killed his mate, and so I removed him, leaving the now free-swimming fry on their own.

These events have proved, up to a point, what wonderful parents *C. nigrofasciatum* are, and they are certainly the most interesting species I have kept. But I will say this, I would not risk keeping adults in a community tank, even though they are beautiful. I have not, and would not chance them. When the present six youngsters in my community tank grow $\frac{1}{2}$ in. larger "out they will come".

In conclusion, breeding this Cichlid has proved a very interesting and remarkable experience for me but, oh dear, their appetites! Without a doubt they are the proverbial "Billy Bunter" of the aquarium.

JUST visited your first aquarium exhibition? If so, and you wish to set up a tank in your own home, the WATER LIFE booklet "First Steps in Aquarium Keeping" will guide you. Order a copy today from your newsagent, at 2/-, or write direct to WATER LIFE Publisher, Dorset House, Stamford Street, London, S.E.1, enclosing 2/2d.

— By —
J. W. Davies

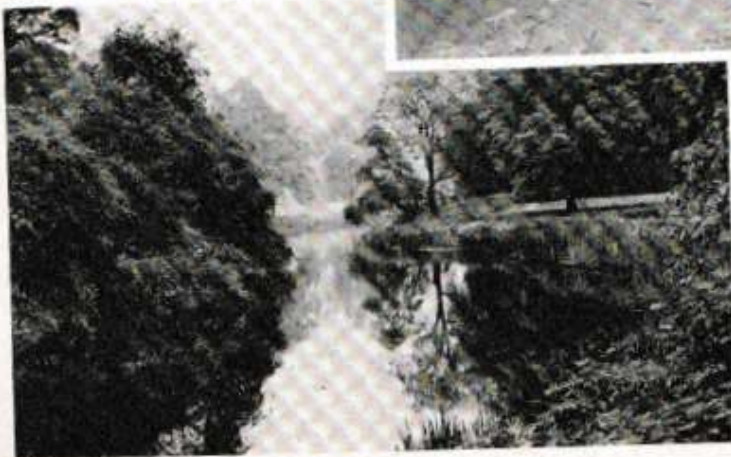
WITHIN *the* GROUNDS of BUCKINGHAM PALACE

Secluded Lake Enhances the
Beauty of Extensive Gardens

BEHIND the austere façade of Buckingham Palace are gardens and lawns, the privacy of which is preserved by high brick walls. Very few pictures of the grounds have been published. Those reproduced here show the quiet retreat with its flowers, shady trees and lake. Privileged guests can meet Her Majesty The Queen in these gardens which retain a rural atmosphere.



Three views of the grounds. Right: Part of the State Apartments and Ballroom, at the rear of the Palace quadrangle, facing the lake.



The aerial picture in the circle shows the Palace, with its grounds stretching away to the bottom left. On the extreme left is Green Park and, top, part of the Mall and St. James's Park, including the lake. The Palace is on the site of Buckingham House which was bought by George III as a town house for Queen Charlotte in 1762.

The present building was erected in 1821 and the east front, visible from the tree-lined Mall, was remodelled in 1913 as part of a scheme which included the erection of the Admiralty Arch and the Queen Victoria statue.

The gardens, which were laid out by a Mr. W. T. Aiton for George IV, are 43 acres in extent.

Royal Patronage of Annual Chelsea Flower Show

Water Gardens a Big Attraction
at World-famed Annual Event



H.M. The Queen Mother with the Late King George VI.



H.M. The Queen and H.R.H. The Duke of Edinburgh.



T.R.H. The Duke and Duchess of Gloucester, with their younger son, Prince Richard.

Left: Her Late Majesty Queen Mary.

Right: H.R.H. The Duchess of Kent.



The water and rock gardens are always a special feature of the Royal Horticultural Society's annual shows, which are now held in the grounds of the Royal Hospital, Chelsea. These events have taken place for over one hundred years, successive venues being Chiswick from 1833, South Kensington from 1861, Temple Gardens from 1889 and, since 1913, at Chelsea. Each year, members of the Royal Family attend a preview and inspect the gardens designed by leading craftsmen. The R.H.S., founded in 1804, was incorporated by Royal Charter in 1809, further Charters being granted in 1861, 1899 and 1928 as its importance grew.

Sylvan Beauty of the Metropolis

Variety of Water Motifs in Royal Parks and Gardens



The Home Office, Whitehall, seen across the spacious lake in St. James's Park, makes an imposing sight. Parts of the lake are particularly picturesque, rockwork, flower beds and trees at the edges giving a series of pleasing vistas.



Well-planted formal ponds in Kensington Gardens. Left: An irregularly-shaped pool with marginal planting in Hyde Park.



A rustic bridge, rock garden and a stretch of water present a pleasing waterscape at Regents Park. A frequent visitor was Her Late Majesty Queen Mary who always admired the gardens.

In the Royal Botanical Gardens at Kew, where rare plants, including aquatic species, are grown.

Five views of Parks and Gardens in or near London that are maintained by the Crown. They possess a character of their own and the lakes and ponds, which are prominent features of each, prove to be centres of attraction to their many visitors.



Ponds and La at the Ro

Favourite Pleasances

Three generations are shown in this picture taken at Balmoral Castle. Left to right: Prince Charles, The Queen Mother, Princess Margaret, The Duke of Edinburgh, the late King George VI, Her Majesty The Queen and Princess Anne.

ON the few occasions when they can find time to withdraw from the public eye, members of the Royal Family seek recreation at one of their country residences. There they get considerable pleasure in roaming the peaceful gardens. The grounds of Buckingham Palace are depicted on page 147 and those of Hampton Court on page 152. On page 149 appears a picture of the Royal Botanic Gardens at Kew. It is fitting to reproduce in company with views of Windsor, Balmoral and Sandringham, the picture of the Dutch garden at Kensington Palace, at which Grace and Favour apartments are occupied.

Not only Henry VIII but Charles II, William of Orange, and the Hanoverian Georges were all monarchs whose influence is to be found in one or more of the Royal gardens. Queen Victoria's interest is reflected in the grounds of Osborne House, in the Isle of Wight, where she spent many happy hours of her life.

Windsor Castle

At Windsor the gardens are several and varied. Lakes, pools and streams play an important part in their lay-out. In the grounds of the Castle, a lily pool shelters beneath the Norman gateway. A circular pool forms the central point of

the sunken garden below the east terrace which adjoins the Home Park and a circular pond is in the middle of the Kitchen Garden.

On the southern side of the Castle are the Savill Gardens where two well-established round ponds are linked by a small stream. The ponds are planted with a large number of Water-lilies, whilst carefully selected marginal plants break the severe outline at the water's edge.

The Virginia Water sets off to advantage the Valley Gardens which cover several acres. Here can be seen in the more marshy areas many trees and shrubs of foreign origin which flourish best in damp soil. Not far away is situated Royal Lodge where the late King George VI and The Queen Mother devoted much time in creating delightful gardens.

Adjacent to Windsor Home Park is Frogmore House whose range of informal gardens with stretches of water amid trees and shrubberies presents numerous pleasant views. Another residence with Royal associations is Fort Belvedere at which the Duke of Windsor did much to improve the gardens.

A considerable distance away from Windsor Castle itself and yet not far from the southern boundaries of the estate,

is Bagsshot Park where the late Duke of Connaught took great pride in the cultivation of the rhododendron bushes that line the lake.

Sandringham House

Whereas Windsor Castle has its State apartments and is as much an official residence as a country home of Her Majesty The Queen, the large Sandringham estate in

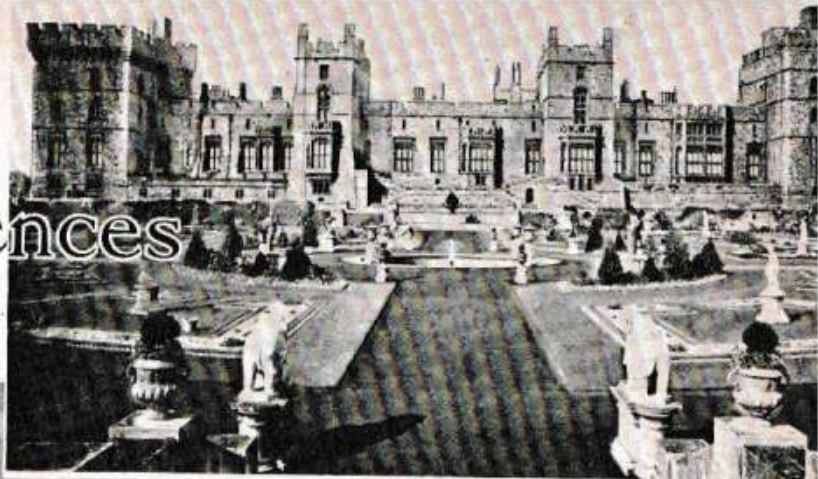
This quiet lake, a favourite retreat for its Royal owners, is on the expansive Sandringham estates in Norfolk.



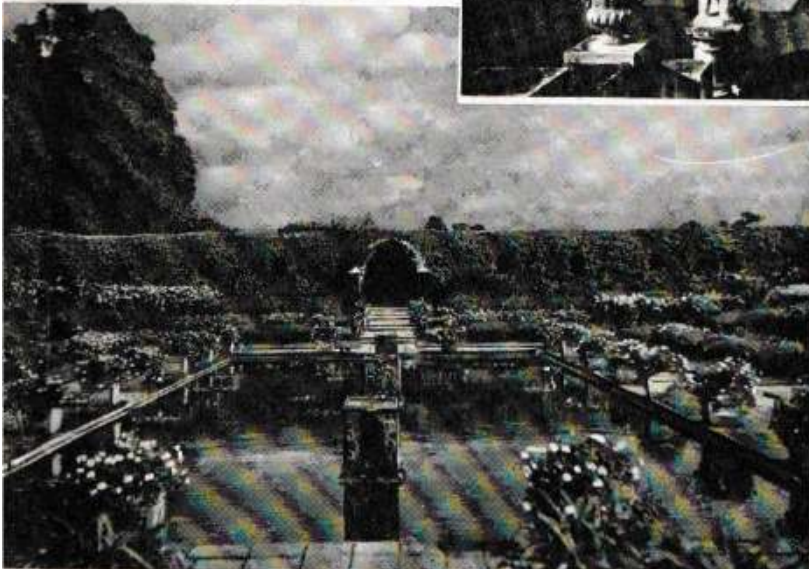
Beauty garden.

akes oyal Residences

s in the Beautiful Gardens



The East Terrace at Windsor Castle showing the ornate gardens, with their statuary, centred round a circular fishpond.



of symmetry is expressed in this photographic study of the rectangular fishpond in the Dutch in the grounds of Kensington Palace. Part of the surrounding covered-in pathway can be seen.

Norfolk is the private retreat of the Royal Family. It was to there that King George VI and his father and grandfather went regularly to enjoy the pleasures not only of shooting and of farming but also of cultivating the beautiful flowers, shrubs and trees.

The detached West Garden is the greatest attraction to those who like to see marsh and aquatic subjects. At the southern end, not far from Church Walk, is situated a well-designed rock garden. Adjoining it is the Upper Lake from which a small stream feeds a number of pools. The water garden proper has in it ferns in profusion, including the Royal Fern *Osmunda regalis*, Irises such as *I. Kempferi* and *I. sibirica*, the huge-leaved *Gunnera manicata*, a subject introduced from Brazil round about 1895, species of Rheums and *Senecio clivorum*, a decorative Chinese marsh plant which often has leaves twenty inches across.

The Royal Family's connection with

In the gardens at Frogmore, near Windsor, which became Royal property during the reign of Henry VIII.

circular water fountain breaking its plain lines. The love of gardens is inherent in the Royal Family.

Scotland is strong and its peoples show natural pride when their Monarch is at one of the residences there. Adjoining the City of Edinburgh is the Palace of Holyroodhouse where, in the centre of the impressive forecourt, is a large water fountain erected during Queen Victoria's reign. In the sheltered corner, where the house of the official custodian of the Palace stands, a well-tended rock garden makes a colourful show.

Balmoral Castle

Further north, in Aberdeenshire, on the banks of the River Dee, is Balmoral Castle. Trim lawns, self-contained gardens and well-tended trees, give a suitable setting to the Castle buildings. A circular pool is seen in the rose garden, a central fountain is in the main formal garden, alpinas are cultivated round the sides of a sunken garden, while a retaining wall bordering the lawn has a semi-



Regal Splendour by the River Thames

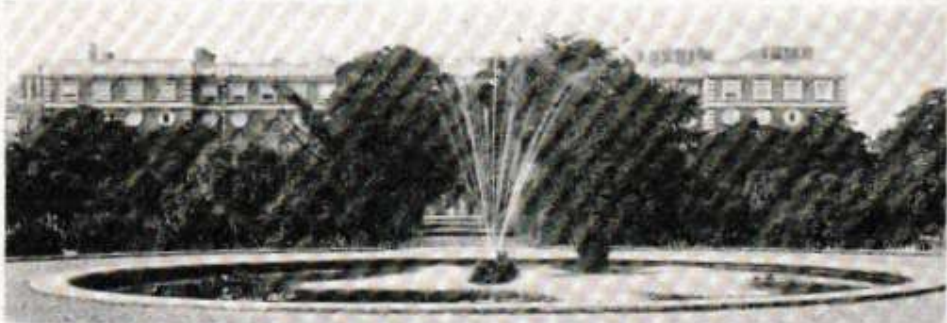
Pleasing Pools and Lakes in the Vicinity of Hampton Court Palace



The Long Water (above), fully stocked with Water-lilies and other aquatics, runs between an avenue of stately trees in the Home Park adjoining Hampton Court gardens. At the extreme end, the Palace buildings complete a splendid view.



Built by Wren, the State Apartments form a majestic background to the cloistered Fountain Court, where a circular pool is placed in the centre of a well-kept lawn.



One of the large circular pools near a wing of the Palace, sheltered by profusely growing trees and bushes. The central fountain breaks the severity of the symmetrical layout. Some of the gardens here were partly redesigned by William III.



Erected by Cardinal Wolsey, Hampton Court was taken over by Henry VIII. The garden (above), named after the Merry Monarch, is set off by the Tudor buildings. Right: The spectacular pond in front of the main Palace buildings. It forms the centre of the Great Fountain Garden.



Growth of the Hobby in Six Reigns

Present-day Status a Comparatively Recent Development

FISHKEEPING has been popular in some countries, particularly in the Orient, since before the Christian era. There is evidence that the Roman invaders of our shores maintained fishpools in the grounds of their villas. In medieval times the importance of the fishpond grew, every castle, abbey, and monastery, possessing one.

Not, however, until after the Coronation of Queen Victoria in 1838 did fishkeeping begin to come into its own in this country. It was in 1850 that P. H. Gosse, A.L.S., a pioneer aquarist and author of "A Manual of Marine Zoology" helped to establish the original aquarium at the Gardens of the London Zoological Society and, from then onwards, during a reign which lasted for over 60 years, public aquaria were established in the Surrey Gardens, Belfast, Edinburgh, Scarborough, Yarmouth, and the Crystal Palace. Later, Manchester and Southport each built one and in 1872 the Brighton Aquarium was opened.

At the commencement of King Edward VII's reign, interest in public displays of fishes lessened but in addition to fishkeeping proving a popular pursuit of many schoolchildren there was, of course, always a nucleus of enthusiastic adults who kept and bred coldwater fish and, in a few instances, tropical fishes. One of the best known of this small coterie was the Reverend G. C. Bateman, A.K.C., who from his rectory at Jacobstowe in North Devon wrote two books that became widely read. One was "Freshwater Aquaria" which, incidentally, included particulars of such tropicals as Paradise Fish, Gouramies, and Siamese Fighting Fish, and the other "The Vivarium".

It was in the era of King George V that we saw the beginning of a remarkable revival of interest in the keeping of aquatic creatures. Not only did the number of people, young and old, who took up Goldfish keeping, increase very rapidly but the early 1920's saw the development of serious tropical fishkeeping.

Many Ready to Start

In 1924, the late Mr. A. E. Hodge founded the "Amateur Aquarist" forerunner of a contemporary journal. He and a small band of enthusiasts spread the gospel at a time when there were many ready to listen and anxious to become active aquarists themselves. Within two years it had become possible to stage an exhibition of coldwater and tropical fish. Progress was rapid and leading breeders decided that it was necessary to bring into being an organisation under the title of "The British Aquarists' Association". As an association it underwent a number of vicissitudes. In 1935 it was decided to liquidate the liabilities of the B.A.A. and to form another association under the same name.

In the spring of that year appeared the "British Aquarists' Journal", official organ of the B.A.A., edited by Mr. L. B. Katterns. The President was that pillar of strength in the hobby, Mr. A. J. Millar of Northampton. At that time the Midland Aquarist Club was flourishing with Mr. W. H.

Cotton as secretary, Southend A.S. was led by Mr. E. A. Clarke as secretary, while Enfield A.S. had as its President the late Hugh Resbury. Contemporary with these societies were, of course, the Scottish Aquarium Society founded way back in 1927, Bristol A.S. in 1931, and East London A. & P.A. in 1932.

The hobby was of sufficient importance in those days to make it worth while issuing standards of exhibition Goldfish, and it was the B.A.A. which was responsible for their creation in 1935. In 1934, London saw a very large all-pets show incorporating an aquaria section surpassing anything of its kind hitherto staged. It was during the early part of King George V's reign that the present London Zoo Aquarium was built.

In 1936 during the brief time when the Duke of Windsor was the uncrowned King Edward VIII we saw not only the growth of a number of societies to look after the

interests of amateur fishkeepers but a desire in London's West-End and elsewhere to keep tropical fish in tanks as a decoration for houses and flats.

Before he became our next King the then Duke of York installed a tropical fish aquarium at his Piccadilly residence. On moving to Buckingham Palace after his accession, King George VI, who had obtained the collection of fish to interest our present Queen, then Princess Elizabeth, and her sister, Princess Margaret, had it removed to the official Royal Residence.

By the time September 1939 arrived everything was set for the hobby to go along by leaps and bounds. Then came the war and, had it not been for the fact that under great difficulties a few aquarists maintained their collection of fishes right through it, the hobby might have died out.

AS SOON as the war was over WATER LIFE, which had been founded in 1936, re-appeared in April 1946 and almost immediately attempts were made to put the hobby on a sound footing. The Federation of British Aquatic Societies inaugurated in 1938 became active again, the National Aquarists' Society formed in 1945, took its place as the successor to the old B.A.A., and the Federation of Northern Aquarium Societies came into being in 1947. It was in that year that the Federation of British Aquatic Societies first issued its "Show Standards for Cultivated Fishes". Later incorporated with these were the revised Standards of the Guppy Breeders' Society, which society had met regularly throughout the war and which now forms part of the Federation of Guppy Breeders' Societies. More recently another specialist Society, the Platy Breeders' Association, has been formed. For those who keep seawater creatures, the British Marine Aquarists' Society has been started and keepers of reptiles and amphibians have had the British Herpetological Society to look after their interests since 1947.

As time went on the clubs grew rapidly and the 45 which were active by the end of 1946 have grown to ten times that number in 1953. Indicative of the interest in Goldfish culture was the decision to form the Association of Goldfish

(Continued next page.)



H.R.H. The Princess Royal (Princess Mary, only daughter of the late King George V and Queen Mary) at a Romford show.

"Long Live the Queen!"

Coronation Messages from the Commonwealth

From the Commonwealth of Australia

THE councillors, officers and members of the Aquarium Society of New South Wales are most appreciative of this opportunity to express loyalty and greetings to Her Majesty Queen Elizabeth on the occasion of Her Coronation.

On behalf of the Society, I would like to say how much we are looking forward to seeing Her Majesty and H.R.H. The Duke of Edinburgh when they visit New South Wales next year. A most enthusiastic welcome from all Australians awaits them.—Peter V. Jensen, Secretary, Sydney.

ON behalf of the Aquarium Society of Victoria, the officers offer to Her Majesty heartfelt good wishes for a happy Coronation Day. We pray that she will enjoy a long and successful reign like her Great-great Grandmother whose name forms part of the title of our Society. We wish her many years of happiness with her own family, and the peoples of the British Empire to whom Her Majesty and H.R.H. The Duke of Edinburgh have endeared themselves. We here in Victoria are looking forward to seeing them in person, when all Victorians will demonstrate their loyalty and affection to our beloved Ruler.—J. J. C. Sharp, Secretary, Caulfield.

From the Republic of India

THE Aquarist Society of India has great pleasure in sending its good wishes to H.M. The Queen on the occasion of her Coronation and in expressing its fraternal greetings to the aquarists of Great Britain.

The Royal Family has long been keenly interested in aquatic life and with such encouragement our already flourishing hobby should grow even more, not only in Britain but all over the world.

Our hobby has done a great deal towards increasing the knowledge we possess about fishes and has proved valuable in forging links of friendship that extend across the seas.—K. T. Gujjar, M.D.(Lond.), President, Bombay.

From the Union of South Africa

MAY we, the officers and members of the South African Aquarist Association, convey to Her Majesty the Queen our humble greetings and best wishes on the occasion of her Coronation. May long life and great happiness be hers and those of her family. We in South Africa look back on those

Growth of the Hobby in Six Reigns

(continued from page 153.)

Breeders, an idea first put forward early in 1948. Its first open assembly under the title of the Goldfish Society of Great Britain took place in the December of that year. As is well-known, the society decided to issue new Goldfish standards and eventually its four basic varieties were published in August 1950. Bristol A.S., which celebrated its coming of age in 1950, issued its own standards based on the originals of the old B.A.A. in 1952.

Just how strong the hobby is today, at the time of another Coronation, can be gauged by the virility of the Federations and specialist clubs, the number of active societies and the many shows that are staged. We wish our new Queen a long and happy reign. Blessed with peace in the years to come, innumerable fishkeepers everywhere—for our hobby has its adherents in many foreign lands as well as the countries of the Commonwealth and Empire—will see an even greater development.



H.R.H. The Duke of Edinburgh pointing out to H.M. The Queen (then Princess Elizabeth) the abundance of fish life in the river running through the grounds of Sagana Lodge, the wedding present from the people of Kenya. It was from Sagana that the Queen returned by air to Britain following the sudden death of her father, King George VI.

happy days when she visited our land and remember well her devoted message to our people.

The Royal Family is a shining example of what family life should be, especially in these days of unrest, strife and revolt.

May God pour out His richest blessing on Our Queen.—Johannesburg. J. de Bruijne, Chairman.

From the Dominion of Canada

THE officers and members of the Canadian Aquaria Society, are both proud and happy that Her Gracious Majesty, Elizabeth II, is Queen of this Dominion. When Her Majesty visited Canada as Princess Elizabeth, she won the hearts and enduring devotion of Canadians from coast to coast. Vivid memories of that historic visit, of her gracious charm and her dedication to those high principles which are interwoven with the British pattern of life, come to our minds as the hour of her Coronation approaches.

We wish to assure Her Majesty that she is in our thoughts and prayers at this time. We pray that her reign may be long and that she may be attended by continued good health and happiness and that not only may her people everywhere enjoy the fruits of peaceful enterprise but that these blessings may be shared by the people of all lands.—Wilfrid L. Whitern, Toronto, President.

From the Dominion of New Zealand

ON behalf of members of the Federation of New Zealand Aquatic Societies and all in the North and South Islands who are interested in the keeping of fishes, I extend these loyal greetings to Her Majesty on the occasion of her Coronation as our Queen. We here, are delighted to know that, as our ruling Sovereign, the Queen will be touring New Zealand with H.R.H. The Duke of Edinburgh. A warm and sincere welcome will be given by my countrymen.—L. D. Roberts, Christchurch, President.

Marlborough College Aquarium

Selective Inbreeding with Platies — Experiments to Determine Optimum Conditions for Plants

Dr. Francis Knowles Interviewed by W. James

WHEN, during a recent conversation, Mr. Patrick Heyworth, an Old Marlburian, mentioned that Marlborough College possessed its own aquarium, I felt that there was a story to tell of interest to aquarists. Introduced later to Francis Knowles, D.Phil.(Oxon), M.A., Marlborough's senior biology master, I was able to glean the following information. I think readers will agree it proves my contention that aquaria in schools and colleges are extremely useful aids to teaching biology and complementary subjects.

Dr. Knowles told me that the College aquarium started in 1938 with three 10-gallon battery jars, some sea water brought from Plymouth by rail and an electric aerator. In the jars were kept anemones, crabs, tube-worms, starfish, sea-squirts, an occasional octopus and other marine animals. These marine aquaria were a most useful addition to the Biology Department at Marlborough, for there are many animal groups, such as the polychaete worms and the echinoderms, which are exclusively marine and without marine aquaria they are difficult to show in the living state.

During the war Capt. Fuller, a local resident, gave up his very fine private aquarium and presented the college with his tanks and equipment, designed for keeping tropical fish. When the war ended, a cautious start was made with Guppies, and later Dr. Knowles and Mr. C. Hughes, the senior biological assistant, encouraged by their initial success, purchased about £10 worth of aquatic plants and tropical fish.

Free-Breeding Mollies

A pair of Mollies bought then might well be regarded as the founders of the aquarium (with Capt. Fuller as the benefactor), for they produced 570 young ones in their first year, at a time when tropical fish were fairly scarce and fetched a good price. The money which was received by selling the young fish permitted the purchase of two new 25-gallon sea water tanks and a heavily built 100-gallon chromium-plated tropical fish tank specially designed for the College aquarium.

There are now in constant operation 27 tropical and 5 sea-water tanks. The aquarium continues to supply fairly large quantities of fish and plants that prove to be surplus to requirements, and the revenue from these is used for the purchase of new equipment and specimens and for running costs. Some of the funds have been spent on a collection of orchids and other plants for class-work and some helps to pay for the occasional use of a trawler on which senior students go out and collect specimens for the marine tanks.

For some years, as part of the normal work in the biology department, the College has been carrying out experimental work on Platy breeding. Starting with a pair of Platies

of very mixed ancestry it has been possible, by continuous inbreeding and selection, to sort out various distinct strains, which it is hoped to re-combine later on and so to obtain exceptionally vigorous hybrid offspring. Hybrid vigour produced in this way is common in some plants and animals. The emphasis has been on size and fertility and colour patterns have been of secondary importance. Other studies have been carried out to determine the optimum conditions of soil, light, and temperature for aquatic plants.

Local Advisory Service

An important development of the work is the advisory service which is provided for fish enthusiasts in the district. After a recent local fair at which Goldfish in bowls were given as prizes at the sideshows, Mr. Hughes, who acts as the curator of the aquarium, had an average of six callers each day for about four weeks, all with questions on Goldfish culture! On one occasion Mr. Hughes was called out to render first-aid when a car full of fish, being taken from London to Bristol, overturned on a slippery road. Mr. Hughes helped to catch the fish, which swam about in pools in the roof and sides of the vehicle, and it was largely owing to his dexterity that so many were rescued.

The students have been very lucky in many respects. They have a number of good *Daphnia* ponds near at hand and laboratory facilities for keeping other fish foods such as Infusoria. Nevertheless, the expansion of the aquarium from a few battery jars to its present state has been largely due to a careful observance of the scientific principles underlying fish culture. The findings have been set in book form by Dr. Knowles. This work, "Freshwater and Saltwater Aquaria" has been published recently by Harrap.

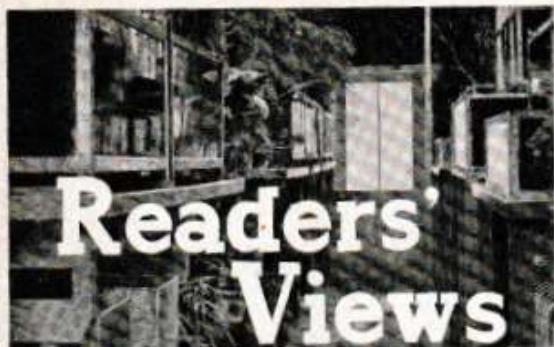
The success of a school aquarium depends largely on the enthusiasm of the masters in charge. Such keenness is infectious and once the pupils' interest is obtained they rapidly become anxious to go beyond the scope of their studies to learn more about underwater life.

It was obvious to me during the interview that the boys at Marlborough are fortunate in having Dr. Knowles and his colleague to introduce them to a fascinating subject, including the tricky branch of the study of seawater creatures.



A pupil, Dr. Francis Knowles and Mr. C. Hughes (left to right) examining tanks which line the corridor leading to the main aquarium room.

Perhaps I can do no better than quote Mr. Heyworth who commented to me: "I can say truly that the interest which scientific students took in aquaria was extremely keen. Dr. Knowles has always seemed to me to be one of those inspired teachers who give the impression that they are learning in company with their students—rather than actually teaching." That compliment is well deserved and shows why it is that Marlborough sets a standard I would like to see emulated elsewhere.



The Editor is not responsible for opinions expressed by correspondents

SEX CHANGES IN LIVEBEARERS

SIR,—A reply to a querist in a recent issue of an American journal, suggests that sex changes in livebearers are confined to species in which the males and females are normally of much the same size, like Mollys and Swordtails, and that such modifications never occur in Guppies, *Gambusia* or Mosquito Fish.

In the past twenty years, during which time I have been specialising in breeding and judging Guppies, I have seen a number of females, which, with one exception, produced a brood of young and then apparently underwent a sex change. Their anal fin developed into a gonopodium but it must be recorded that they proved sterile as males. I wonder if they were non-functional hermaphrodites?

Many Swordtails, which first appear to be females but, later, develop male characteristics, have never produced a brood as females yet turn out to be fertile as males. This seems to prove that these particular fish are not really specimens that have changed their sex but are males whose normal development was at first retarded. The fact that there are such cases of belatedness may account for the difference in the number of Swordtails and Mollys that appear to change their sex in relation to Guppies appearing to do the same thing.

I might add that the apparent change of sex in Guppies is not confined to fish in this country for I have a copy of a photograph of a Guppy alongside a 6 in. rule, to show its size. This specimen which looks at first like a female had apparently changed to a male. It measured 2½ in. long. The fish belonged to Mr. Joseph Lingg, a fish culturist, who, at that time, was the proprietor of the Bronxville Nurseries, near Yonkers, New York. Mr. Lingg aspired to raise, if possible, a giant strain of Guppies, using this fish as the male parent but, presumably following the general rule, it proved sterile. At least, there were no reports to the contrary.

Kenton, Middx.

W. G. PHILLIPS

(The term hermaphrodite describes an individual which manifests male and female germ cells. It may be non-functional (when, although both kinds of cells are elaborated, only one of them is effective) or functional (where both kinds of cells develop and both function). If a female produces a brood and then, after developing a gonopodium, is mated to a proved virgin female and fathers a family, then a complete sex change has undoubtedly taken place. The possibility of reversal in Mosquito Fish was discussed in the October 1946 issue of WATER LIFE. As the author then stated "some of the reported examples are not fully authenticated, and genuine reversals are not nearly as common as some aquarists would have us believe". It would be interesting to receive detailed reports of instances where proved changes have taken place.—Ed.)

MEPACRINE CURE FOR WHITE SPOT

SIR,—Mr. D. C. Slater described the treatment of fishes affected by White Spot with Mepacrine hydrochloride tablets in WATER LIFE (June 1952 issue). The following account confirms the successful use of this drug.

I have one aquarium 30 × 15 × 12 in. which receives a fair amount of daylight, supplemented by artificial light for six hours each day. The tank is heavily planted with *Vallisneria spiralis* var. *torta*, *Sagittaria natans*, Amazon Sword Plants, *Cabomba*, *Ludwigia*, Indian Fern, *Acorus gramineus* var. *pusillus*, *Salvinia* and *Nymphaea stellata*, all making strong growth. At the beginning of my story, which started last December, the fishes it contained were:—seven White Cloud Mountain Minnows, five Beacon Fish, two Zebra Fish, one Blue Gourami and one female Guppy. All appeared to be healthy. The

experiences are given in date order which is as, follows:

Dec. 13—Two male Guppies, one Cherry Barb, one Kuhl Loach and one Neon Tetra were purchased and were introduced into the tank. Dec. 18—One small spot was noticed on the caudal fin of the Cherry Barb. Dec. 22—The Gourami and Beacons were brushing themselves against the plants and small white spots could be seen on their fins. Dec. 25—One Zebra Fish and the Neon Tetra became infected. I decided to treat them with Mepacrine, dissolving one 1½ grain tablet in two pints of tank water. The solution was added to the tank very slowly with plenty of stirring. Dec. 27—The Beacons were heavily infected on their bodies and fins and were in a very distressed condition. There was hardly a part of their bodies not covered by a spot and one fish had four spots on each eye. A second Mepacrine tablet was added and the temperature of the water raised from 75 deg. to 82 deg.F. The plants appeared to be unaffected and were making good growth. The Zebra Fish was clear of spots and the Gourami showed nothing more than scars on his fins.

Dec. 28—By now, the Neon and Cherry Barb were clear but the Beacons were still in a bad way. Up to this date there had been no trouble with the fish rising to the surface. In fact, as they seemed indifferent to the treatment, I increased the dose to 1½ tablets (2½ grs.). Dec. 30—In addition to the Beacons still being infected, the others looked off colour and made frequent trips to the surface. The plants showed signs of slowing down.

Jan. 3—The spots on the Beacons showed signs of clearing at last but two plants, the *Vallisneria* and Indian Fern had to be removed as they had turned brown. Jan. 4—All spots had disappeared from the fish which now appeared to be more lively, taking a feed of *Daphnia* greedily. Jan. 5—The female Guppy appeared bloated and dropsy was suspected. Jan. 6—The female Guppy died.

Jan. 7—I changed half the water and lowered the temperature to 78 deg.F. Jan. 11—All but the last 3 in. of water was changed and the temperature lowered to 75 deg.F. The fish had improved in condition and were taking all the livefoods I could provide.

Six weeks after the spots had cleared, the fish were in first-class condition and the plants flourishing, with the Amazon Sword Plant in flower. I feel that had I used the heavy dose of 2½ grains at the outset the results would have been even more satisfactory.

A. DOWNIE

ESTIMATING THE AGE OF TORTOISES

SIR,—In his article "Tortoisés and Terrapins for the Home Vivarium" (WATER LIFE, April 1951), Mr. Alfred Leutscher, B.Sc., repudiated the popular theory that it was possible to estimate the age of a Mediterranean Spur-thighed or Algerian Tortoise (*Testudo graeca*) by counting the number of rings or ridges on a carapace shield.

My experience with two groups of newly-hatched tortoisés confirms Mr. Leutscher's opinion. A baby that I hatched fourteen months ago (right of photograph) now has three rings on each shield while his brother, who died at the age of six months, had two. Another pair, hatched ten weeks ago (one of which is on the left of the photograph), have two rings and traces



Two baby Tortoisés hatched out by Mrs. Noel-Hume.

of a third. Last summer I purchased a small Tortoise of the same species who, by her size (carapace length: 5 cms.), I judged to be about two years old. She then had four rings and a fifth has appeared within the last six months.

I should be most grateful if readers who have tortoisés hatched in this country, could give me details of ring-growth after the age of eighteen months.

10, Melbury Gardens,
Wimbledon, S.W.20.

(MRS.) A. NOEL-HUME, B.A.

P.M. TO BREED NEW PLATY VARIETY?

SIR.—I was interested to see the reference to my gift of Platies to your Prime Minister (WATER LIFE, April 1953, page 92). On Mr. Winston Churchill's last birthday I heard a broadcast from one of Toronto's radio stations when the announcer said it was known that Mr. Churchill had several hobbies; one was painting in oils and another, which was not generally known, was that he was an ardent, enthusiastic breeder of tropical fish.

On January 3 I wrote a letter telling him that I had, through selective breeding, developed a very beautiful variety of Platy. The males had bright blue bodies, bright red tails and yellow dorsal fins. The females were light chocolate in colour, with bright red tails. I suggested that if he would like to add some of these to his collection I would be very glad to send them to him by air express. When Mr. Churchill was on his way to the United States on December 31 he wrote me on board R.M.S. Queen Mary thanking me for the offer and suggesting that he would greatly like to have the fish if, on his return to England at the end of January, I would ship them to him.

I purchased a shipping container on February 10, filled it with water and packed it in cellophane (on account of the lightness in weight) and sent to Mr. Churchill, via Trans-Canada Air Express; five fish; two males and three females.

Ten days later I received a further letter from Mr. Churchill at 10 Downing Street, thanking me very much for the consignment of Platies, saying that they had all survived the journey and had arrived in good healthy condition. He was highly pleased with the blue-red species and said that he had often seen the ordinary red variety of Platy but had never seen any as beautiful as those which I had sent him. He is placing these in a separate aquarium and will breed them to develop what he thinks will be a new variety for England.

It gave me a great deal of pleasure to ship these fish and to know that they arrived in excellent condition. I might advise you that the fish were dispatched from Malton Airport, near Toronto, at 4 o'clock in the afternoon and were delivered to Mr. Churchill at 3 o'clock the next day.

Toronto, Canada W. H. HEWITT

(This letter was, of course, written before the announcement that a Knighthood had been conferred on Sir Winston.—Ed.)



Mr. Hewitt selecting the Platies which he sent by air to Sir Winston Churchill.

COLORATION OF HI-GOI CARP

SIR.—When sorting out some Hi-goi Carp from a breeding pond last November I found one well-grown pure gold fish with a patch of silver on the belly. Of the many hundreds of Hi-goi I have handled this is the first to show this combination of colours so common in Goldfish.

Steel-blue and gold I have never seen but all the many shades and colours—gold, silver, steel-blue and even brown may show permanent black markings. Pure silver fish of good colour and size are very rare. The majority have dark shading on the back which tends to increase with age.

Woburn,
Bletchley, Bucks.

BEDFORD

(The ponds at Woburn, residence of the Duke of Bedford, are noted for their Hi-goi, some of which have grown to an immense size for the variety.—Ed.)

FIN ROT CURED BY PHENOXETOL

SIR.—I have found the use of Phenoxetol satisfactory in treating fin rot caused by pollution and dirty tank conditions. The infection was treated in two stages, the first unsuccessfully, as the fish, treated separately, were returned to the untreated tank. In the second stage, the tank was cleaned before treatment commenced. The concentration of Phenoxetol, used throughout was 10 milligrammes of 1% v/v per litre, and the duration of treatment about 24 hours.

In the first stage, a Tiger Barb and two Neon Tetras were placed in the solution. The Neons showed signs of distress and were removed. No such distress was apparent on the part of the Tiger Barb. All three fish were returned to the untreated tank where they subsequently died. Two Beacons and two

Pristellas were similarly treated, without apparent result.

In the second stage, most of the water in the tank was changed. All the plants, rocks and gravel were removed and cleaned before being returned to the tank. The Phenoxetol treatment was then repeated on the Beacons and Pristellas which subsequently recovered their finnage. Two Harlequins were also treated with good results but it was found necessary to make the Phenoxetol up to the correct strength by means of two additions over a period to avoid causing distress to them.

I treated a Fighter similarly and subjected a fit *Epiplatys chaperi* to it with no ill-effects. Experience shows that the use of two solutions of increasing strength is a routine which is advisable in all cases. Adult fish which did not show discomfort when placed in the solution include Black Mollies, Platies and White Cloud Mountain Minnows. Four-week old Platies were killed by this treatment.

Wallington, Surrey.

C. E. BOWERS

INCIDENCE OF SAPROLEGNIOSIS

SIR.—We are conducting an investigation into the incidence of Fungus Disease in freshwater aquarium fish in Great Britain.

There appears to be confusion regarding the aetiology of diseases in aquarium fish and we understand from a mycologist that there is doubt as to the identity of the parasitic fungus, the evidence pointing to a specific organism being involved in different species of fish.

Aquarists who are interested in the research we are carrying out are invited to forward information under the following headings:— 1, Number of fish handled annually. 2, Number of fish contracting "Fungus Disease". 3, Number of fish dying from "Fungus Disease". 4, Estimated average time between the first symptoms noticed and death of the fish. 5, Relative number of coldwater and tropical fish contracting the disease. 6, Nature of treatment given, if any, and whether or not favourable results are obtained. 7, Nature of food used as staple diet and whether any live or green food is given regularly.

In addition, we shall be glad to have comments on any other aspects of the condition. At this stage, specimens of diseased or healthy fish are not required. It seems likely that in this preliminary investigation we shall have to limit the practical work to *Saprolegniosis* in varieties of the Goldfish (*Carassius*

auratus) but naturally we shall welcome information referring to other species. It is not anticipated that we shall be able to come to any definite conclusions for some considerable time.

20c, High Street,
Aylesbury, Bucks.

P. N. HUMPHREYS, M.R.C.V.S.
Technical Adviser,
Shaw's Veterinary Products Ltd.

(Mr. C. van Duijn, Jr. dealt with Fungus Disease (*Dermatomyces*) in the eighth of his series of articles "Diseases of Fishes" in the June 1950 issue of WATER LIFE. He explained that Fungus is caused by a great many kinds of moulds of the Family *Saprolegniaceae*, particularly species of the Genera *Saprolegnia* and *Achlya*, adding "Correct determination of species is difficult, since this is only possible if they are in the stage of sexual reproduction". Mr. van Duijn suggested at length different treatments that could be used.—Ed.)

SPONTANEOUS PARTHENOGENESIS

SIR.—In the April, 1953, issue of WATER LIFE appeared comments on the report by Dr. Helen Spurway of Guppies produced without apparent fertilisation. Two examples were given in the original report published in *Nature*. Dr. Spurway stated, quite rightly, that the first could probably be explained and went on to give the second as a case of spontaneous parthenogenesis.

I expect that a number of fishkeepers will support the latter theory and may quote what appear to be similar occurrences experienced by them. But will not the more experienced breeders of livebearers, after reading the information so far available, see several possible explanations for what has happened and want more details about the conditions under which the occurrence took place? Only then will they be ready to accept the view that the young Guppies had been produced parthenogenetically.

Kenton, Middx.

W.G.P.

PROBLEMS ANSWERED

Queries are answered free of charge by a panel of experts. They should be sent to "Water Life," Dorset House, Stamford Street, London, S.E.1, together with a stamped, addressed envelope for the reply. All queries are answered direct but a small selection is published below.

Heater for a Two-foot Tank

What size heater should I use in a 24 x 12 x 12 in. aquarium? I have been told that a 100-watt heater is too large as, should the thermostat stick, the water would rapidly become very warm—(F.P., Ipswich, Suffolk).

We would recommend a 100-watt heater for a 24 x 12 x 12 in. tank but we know many people use a 60-watt. If a 60-watt heater is used you may have to change it for a more powerful one during the winter if the room in which the tank is situated gets very cold. Theoretically it would take a 100-watt heater 4½ hours to raise 10 gallons of water from 75 deg. F. to 90 deg. F. but this does not take into account the room temperature so that, in practice, it would take slightly longer. Few fish will stand a temperature much in excess of 90 deg. F. It is therefore advisable to examine the thermostat from time to time to see that it is working properly.

Cleaning Tubifex

Can you tell me the correct way of separating Tubifex worms from the mud etc. of ponds and streams?—(C.J., Manchester).

The first thing to do to clean the Tubifex from the mud is to wash the mass freely under the tap. Then place what is left into a muslin bag. This bag is then suspended in a deep bowl of water and left for several hours. During this time the worms will leave the debris and pass out into the water through the holes in the muslin, afterwards collecting together on the bottom of the bowl in a round ball. It is best to have running water in the bowl to assist the cleaning process.

Zebra Fish

Some details concerning the breeding of Zebra Fish (Brachydanio rerio) would be helpful.—(C.F., Edinburgh).

Zebra Fish are egglayers that drop non-adhesive eggs. After feeding up the adults, place a male and a female (some aquarists use two males to one female) in a tank which has a layer of marbles over the bottom and about a 3 in. depth of water. If spawning takes place most of the eggs will fall where these avid egg eaters cannot get at them. Remove the parents as soon as the spawning is finished. When the

fry hatch, which may be in from two to five days, they will be difficult to see. They should be fed on Infusoria at first and then Mikro-worms or finely chopped White Worms until they are large enough to take larger food. When the female is ready to spawn, this can be seen by the full or bulging shape of the body, particularly when viewed from above.

Iguanas in the Vivarium

I wish to keep some Australian lizards in a 5 ft. vivarium fitted with overhead lighting and heating. Within it is a pool 1½ in. deep which covers one third of the bottom area. I should prefer either Iguana tuberculata or Iguana delicatissima. Can you give me some information on their care and maintenance?—(A.J.C., King's Lynn, Norfolk).

You should have no difficulty in keeping Iguanas provided they have sufficient room in which to live—and you have provided this with your 5 ft. vivarium. As these lizards are tropical they will require heating throughout the year. Keep the contents of your vivarium dry—apart from the pool of course—and put down a gravel bed and a number of branches as the creatures like to climb. The species you mention are chiefly vegetarian taking fruit, lettuce, etc., but will also eat meat, fish and dead mice occasionally. They may be a little fierce at first, and their bite can be painful, but they usually settle down and become very tame.

Building a Large Aquarium

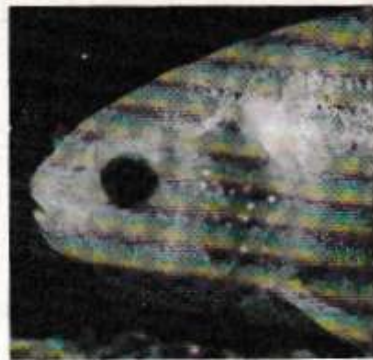
I want to construct a tank 3 ft. 9 in. long, 14 in. deep and 10 in. wide. Would you tell me what thickness of glass and gauge of angle iron I should use?—(R.E.C., Coventry).

An aquarium of the dimensions you give is best constructed from angle iron 1½ in. x 1½ in. and 1-plate glass. You should have no trouble provided it is firmly supported along the whole of its length to prevent "whipping".

Sexing Goldfish

Please tell me the best way of sexing Moor and Veiltail Goldfish—(W.O., Middlesbrough).

All varieties of Goldfishes are distinguished sexually by the appearance of tubercles or small pimples on the gill



Photograph

[L. E. Perkins

Male Goldfish showing the white pimples on its gill plate and front edge of the pectoral fin. These tubercles are a sex characteristic.

plates and along the forward edge of the pectoral fins during the breeding season, that is, provided they are in breeding condition. This applies to the males, the females are distinguished by a thickening of the body in the region of the vent, which often gives them a lopsided appearance when viewed from above.

Spawning Angel Fish

I have a true breeding pair of Angel Fish about nine months old. Several weeks ago they spawned using the leaf of a Cryptocoryne plant. After two days they had eaten all the eggs. They spawned again three weeks later and by the next day a few of the eggs had gone white and the adults were seen to be trying to remove these. In doing so they ate some good ones and others fell off the leaf. The following day they had all gone. Can you give me any advice and also tell me whether acid should be added to the water?—(H.B., London, E.17.).

The next time your Angels spawn, remove the parents and install an aerator so that a fine stream of bubbles keeps the water circulate around the eggs. This keeps them clean. Some aquarists also add a small quantity of methylene blue after the eggs have been laid (just sufficient to tint the water when the hand is held submerged at the back of the tank). The colour should be barely discernible. The result of an American investigation showed that no spawnings were recorded in waters with a pH range outside 6.2 to 7.4 and that they were most prolific when the pH was between 6.6 and 7.2. To turn alkaline water acid, add small quantities of acid sodium phosphate and check with a pH indicator at intervals until the desired pH value is obtained.

Control of Green Algae

I have a pond in which Green algae has developed on the sides and rockwork. I have attempted to clear it but it returns at an alarming rate. Is there a cure, preferably one not involving the emptying of the pond?—(L.C.B., London, N.4.).

Algae is a beneficial organism particularly if it is of the "stringy" or filamentous type. When present, the water is usually clear and there is plenty of microscopic aquatic life. Unfortunately, algae gets too abundant and the only way to remove it is by hand. However, adequate plant growth,



PAIR OF ZEBRA FISH

The ever-moving Zebra Fish (Brachydanio rerio) are comparatively free breeders although they are avid egg eaters. The upper fish is a mature female and the lower one, a male. They grow up to 1½ in.

Photograph:

[G. J. M. Timmerman

particularly Water-lilies, will keep it in check by reducing the top light which is so necessary for its development. So if you have no lilies at present, one large or two medium-sized types, should make a big improvement. The red and a yellow *Marliacea* hybrids can be recommended.

Warmth for Goldfish Fry

I am shortly going to purchase 25, seven-day old Goldfish fry, consisting of Orandas, Moors and Veiltails. Should the water in the tank be heated?—(Miss S.C., Stanton Hill, Notts.)

Your fry will require heat for the first three months and the water should be around 65-70 deg.F. They will also require plenty of room as they grow. The smallest tank with which to start should be 24 x 15 x 12 in. There should be four tanks of this size for the fish by the time they are four months old, assuming they are all still alive.

Death and Surfeit

Will it harm my fish if they are left alone whilst I go on a week's holiday?—(M.L., Tonbridge)

There is no need for you to worry about your fish whilst you are on holiday. In Nature, fish live by dearth and surfeit, which means that they starve and gorge according to season. If your fish have been well looked after they will probably benefit by the week's abstinence.

Loss of Colour

I have been successful in spawning and rearing Glowlight Tetras but the fry, which are now five months old and over an inch long, do not show the quality of colouring seen in the parents. Is the water responsible for this? It is soft and acid—pH 6.5.—(W.E.H., Dagenham)

Quite frequently the offspring from imported stock do not show such bright colouring as their parents. This is particularly noticeable in Characins, but why it should be so we do not know. We suspect that by getting the water into a suitable state for the fish which are more difficult to spawn, something, possibly trace elements essential to their needs, is removed. We do not yet fully know the composition of their native waters. Again, it may be that some essential food for the fry cannot

be provided. The only thing that can be done, in the light of present knowledge, is only to breed from the best fish and try to retain as much colour as possible. It may be that, with careful breeding, in time we may be able to raise home-bred stock with the full colouring of imported fish. There might be a local cause which could be remedied easily, i.e., if the fry have been raised in very light surroundings their colours would certainly be pale and, if they were moved to a thickly-planted tank with plenty of shade, there would be a considerable improvement in their colouring.

Feeding *Metynnis*

*Can you enlighten me regarding the feeding of *Metynnis schreitmulleri*? My two fish are in a community tank and have been offered livefoods and dried foods but all they seem to eat is the *Cabomba* plants which are now sadly depleted.—(E.R., Wigan, Lancs.)*

Some of the *Metynnis* species have a decided liking for vegetation and are reputed to like *Vallisneria*, which they will nibble until they ruin the plant. They should be supplied with Duckweed, chopped lettuce or some other green food, together with some livefood, as well as prepared dried food. It is possible that a short period without food may be necessary before they will take anything which is not living.



Photograph: (G. J. M. Timmerman) *Glowlight Tetras, a tropical species not easily induced to spawn in aquariums.*

FOR YOUR BOOKSHELF

Fishes of the Red Sea*

THE daring submarine investigations of Dr. Hans Hass of Vienna have attracted attention all over the world. It was in the spirit of sport that he first undertook to try conclusions with sharks during his expedition to the Caribbean Sea. His adventures are vividly described in his first book, "Diving to Adventure".

On his return from this expedition he developed a new technique of research and equipped the craft "Sea Devil" for fresh voyages of discovery. Equipment and vessel were both lost owing to the war. But Hass did not despair. He turned up alone, with only two boxes containing his diving apparatus and submarine cameras, in Port Sudan on the Red Sea, determined to explore the shark-infested coral reefs and to penetrate submarine depths never before reached by any human being. The gamble succeeded. The courageous in-

vestigator with a small team of helpers entered a world of breathtaking beauty and manifold perils. After visiting the dead city of Suakin, Dr. Hass dived down to the bottom of the reefs, trod the decks of sunken vessels overgrown, as in the tale of the Sleeping Beauty, by a trellised hedge of coral. He defied Barracudas and sharks. In the midst of a shoal of great "sea devils" he swam right up the very jaws of these huge beasts in order to photograph the parasites inhabiting their gaping throats.

The description of the natives and the British colonial officials is full of humour. The biological data obtained, not from books and aquarium study, but from observation of the state of Nature, are most instructive. This account of his experiences, which includes eighty-one first rate photographs, forms the documentary record of a performance without parallel.—R.E.V.B.

*"Under the Red Sea", by Hans Hass. 208 pp. Stiff cloth board covers. Published by Jarrolds, Publishers (London) Ltd. Price 10/6d.

WATER ANALYSIS

Samples for analysis should be sent in a clean pint bottle to Water Life Analyst, 12, Featherbed Lane, Addington, Surrey, together with a fee of 5s. per sample. The name and address of the sender and details of prevailing conditions should accompany each sample which is submitted.

*Sample received from R.W.P., West Wickham, Kent. Taken from a 24 x 12 x 12 in. tropical aquarium which had been set up for four months. The tank contained 26 assorted plants of which the *Sagittaria* was dying. In addition there were four bunches of *Colorfern* and some weathered rock. Aeration and filtration were supplied. A 40-watt bulb provided illumination. From plant to plant there appeared to be greenish streamers. In the previous few months two Dwarf Gouramies, three Platies, one Scissortail and a Guppy had died and, at the time of sending the sample, a Fighting Fish and a Guppy did not look healthy.*

Test for impurities.—Appearance: clear. Odour: none. Total mineral content: 0.0390 per cent, satisfactory. Organic matter: 0.0090 per cent, satisfactory. Nitrogen compounds: 0.000072 per cent, organic pollution from vegetable matter indicated. Ammonium compounds: 0.000012 per cent, satisfactory. Poisonous metals: none detected. pH: 8.0. Chlorine, as salt: 0.0086 per cent, satisfactory.

Suggested corrections.—The chemical analysis of this water gave results that reveal organic pollution of vegetable origin, and it would appear that the tank is too heavily planted. This is borne out by the rather high pH value obtained. Microscopical examination of the short colourless fibres present in the sample revealed them to consist of glass wool, and this is undoubtedly the main cause of the death of the fish, for these particles of glass will not only cause suffocation but will, if swallowed, also penetrate vital organs. The tank and plants must, therefore, be completely cleaned, making sure that every particle of glass wool is washed away. The glass wool packing in the filter should be replaced with granulated charcoal for the time being and care taken to ensure that the glass wool cannot get into the tank water on subsequent occasions. The tank should contain fewer plants.

Royal Gardens*

IT is appropriate to note, in this special issue, a book which tells simply but authoritatively the story of interest shown by the Royal Family in the gardens of Buckingham Palace, Windsor Castle (including Frogmore and the Woodland Gardens), Sandringham House, Balmoral Castle and the Palace of Holyroodhouse. The author tells us of the keenness of the late King George VI and the Queen Mother in creating beautiful landscapes and he helps, in doing so, to reveal the characteristics of a monarch and his Queen who endeared themselves to the people of Great Britain. The subject is one that calls for suitable pictures and there they are—106 of them—all of first-class standard. A number show the lakes and ponds and the volume is one which will be eagerly sought by the garden-lover, particularly if he is a pondkeeper.

*"Royal Gardens" by Lanning Roper. 96 pp. Stiff cloth board covers. Published by Country Life Ltd. Price 15/.

In and Around the Aquaria World

— By W. J. Page —

THE Coronation of our Queen is of such importance as to merit fully the inclusion of special features in this issue. They show the interest of Her Majesty and other members of the Royal Family in subjects that come within the orbit of our hobby. This tribute by WATER LIFE on a great occasion is one which readers will readily approve—of that I am certain.

Somewhere in one of the many stands lining the route will be two folk nominated to represent our hobby. They have to thank the Federation of British Aquatic Societies, and especially its persistent secretary, Mr. R. O. B. List, for their seats. A letter was sent by the F.B.A.S. suggesting that, as a national organisation, it should be considered when the allocation of seats was made. The request was rejected but Mr. List, hearing that certain seats were not being taken up, applied a second time. The result? Two seats were reserved for F.B.A.S. representatives. Their disposal? They were balloted for and Hampstead A.S. were successful. Representing that society and in turn the F.B.A.S. and the hobby in general will be Mr. & Mrs. Ward.

Congratulations to Mr. List on remembering the old tag "If at first you don't succeed . . ." and to Mr. & Mrs. Ward who will have a very happy task to fulfil on behalf of all fishkeepers.

MEMBERS of Lambeth A.S. are ever ready to welcome visitors and I was reminded of the line "Any time you're Lambeth way" when invited to attend a social evening which they organised in April at West Norwood. The meeting place is just within the Lambeth Borough boundaries although some people living in the S.E.27 postal area might not readily acknowledge that their municipal authority also controls the S.E.11 thoroughfare which inspired composition of "The Lambeth Walk". Membership of the society represents a good cross-section of the community but genuine interest in fishkeeping ensures that no notice is taken of social standing.

The club, which includes a high proportion of exhibitors, was copying the example of Clapham A.S. in holding an open evening to which members of clubs affiliated to ASLAS were invited. Other guests included Mr. and Mrs. Riddle of Hendon, well-known for their connection with the Federation of Guppy Breeders' Societies. Mr. Riddle has lectured to the society in the past. Mr. J. E. Searle of Balham A.C. challenged Lambeth A.S. during the evening to put up a team for an interclub quiz.

AN addition can be made to the story about the recently-discovered *Caracanth*, Professor J. L. B. Smith, who examined the earlier finds, and who hopes that a third specimen may be obtained soon, has invited interested specialists to join in an investigation of any future catch. By assigning parts of the specimen(s) to experts there will be a better chance of deriving the fullest possible knowledge of the make-up of these creatures. It is intended to assemble apparatus and



H.M. The Queen, when Princess Elizabeth, received the honorary degree of D.C.L. at Oxford. At Oriel College she showed amused interest in the leisurely movements of "Testudo" the tortoise, college mascot.

materials required by the experts at the Cormoro Islands.

WHILE in Blackpool recently Mr. P. S. Campkin of the F.B.A.S. renewed acquaintance with Mr. R. E. Legge, curator of the Tower Aquarium, Blackpool, and was interested in the exceptional variety of carefully chosen rockwork in the tropical tanks. I am told that Mr. Legge enjoys mountaineering as well as fishkeeping and fish breeding. It is said that he takes a hammer and cold chisel in his rucksack. One can imagine the dual pleasure he gets admiring the view from the summit, after a stiff and somewhat precarious climb, and then, turning aside, knocking off one of the many superfluous knobs or excrescences, appreciative of the fact its shape makes it suitable to place in one of his aquariums. Mr. Legge's views on rockwork, referred to on page 165, can be readily appreciated in the circumstances.

EXPERIMENTS, initiated last year by Mr. R. W. Andrews, of London, to transport fish eggs by air opened up the possibility of a new order of fish culture. He carried out a few "dummy runs" with tropical fish eggs. They were not all successful but the results were sufficiently encouraging to make him persevere with the idea.

This season, he is working in co-operation with Mr. W. Vorderwinkler (New Jersey, U.S.A.) who in turn has linked up with some interested German aquarists. Mr. B. Jordan (Texas) has promised to join in, using eggs of various amphibians.

At least one British firm (South Devon Aquatics, Paignton) have advertised their scheme for supplying Goldfish spawn, a scheme which has attracted the attention of Mr. T. de Bono of Malta. For relatively short journeys, the firm dispatches the spawn by rail in the usual type of fish can. Mr. Andrews is of the opinion that the

use of small tube containers would prove practicable to send eggs by air.

From South Africa has been sent an enquiry to the Goldfish Society about sending Goldfish eggs by air. Such exports have been carried out with trout eggs and if spawn of high-class Goldfish stock can survive the journey it should be possible to get fish of exhibition standard into the tanks and ponds of fishkeepers in all parts of the world. It would help if all interested in the possibilities were to pool their knowledge.

HAS there been a re-orientation of the Goldfish Society's policy? The G.S.G.B. took up a strong stand when its four basic varieties were introduced. The implication of their appearance was that the existing show standards were unrealistic. Statements were made which suggested that the old but artistic conceptions of the unachievable, whereas, it was claimed, the new quartette is within the bounds of biological possibility.

The four accepted varieties excluded such types as the Fantail, Comet and Oranda and served to discourage the preservation of crossbreeds which could, by a stretch of imagination, be said to come within one or other of the more numerous forms to which the older standards apply. In other words, the opinion of the G.S.G.B. is that the old standards encourage the retention of fish which should, strictly, be discarded if a planned method of breeding to attainable standards is to be carried out.

Now comes the news that the society has come to recognise that there is a demand for varieties other than the four basic forms that have been found by experience to be practicable standards. While not prepared to add sub-varieties to the four basic varieties, they are ready to co-operate by mooring three such sub-varieties which, in their opinion, could advantageously replace the standards hitherto accepted elsewhere.

Hopes have been expressed that the G.S.G.B. and F.G.B.S. might co-operate with other interested parties in producing one universally acceptable set of Goldfish standards. I do not think that this latest news suggests that the chances of agreement are nearer. On the contrary, the official pronouncement by the G.S.G.B. chairman that the committee is not prepared to negotiate these (G.S.G.B.) standards militates against the possibility. Further, although the introduction of sub-varieties indicates a concession, that does not necessarily mean any relinquishment of the belief by the G.S.G.B. in the revised standard of values that their four varieties have set. But, having said that, I know the committee is anxious to see the Goldfish hobby develop on sound lines. If any behind-the-scenes moves are made, closer co-operation could result.

I believe that some members of both this specialist society and the Federation would like to see a working arrangement but neither organisation appears willing to make the first move. That is understandable, for were the Judges' and Standards Committee of the F.B.A.S. to approach the Goldfish Society that might be thought to indicate anxiousness to replace the old with the new. Similarly, the G.S.G.B. is

not prepared to sacrifice the work it has carried out on creating its basic varieties by entering into a weakening compromise with the Federation. The G.S.G.B. would, of course, be in a strong position were it to make the overture. If, with its backing as a club of specialists, it invited the F.B.A.S. to recognise the four approved varieties as the basis of future F.B.A.S. standards, the Federation would have to think twice before rejecting the views of a knowledgeable and representative organisation, and give a sound reason for doing so.

AFTER 18 years of yeoman service Strachan Kerr has given up his office as secretary to the Scottish Aquarium Society which organisation was founded in 1927. Mr. Kerr, whose drive and enthusiasm have done so much to build up the S.A.S. and indeed the hobby throughout Scotland, took over the post half-way through 1935 when the then secretary had a nervous breakdown. He agreed to fill the position for the ensuing six months. That his offer to give help temporarily resulted in so long a term of office speaks for the confidence which the members placed in his ability.



Mr. Strachan Kerr

The trials and tribulations in the intervening years have been tackled successfully by S.K. and it was due to his drive and initiative that the society was stimulated to do things on an ambitious scale. He was encouraged in his policy by his wife. Illness a year or two back made it necessary for him to take life easier and now comes the announcement that he has handed over his responsibilities to Mr. A. Heron.

Another change has been caused by the withdrawal of Mr. H. Thomson who has been treasurer since 1939, during which time the Strachan-Harry combine has proved a smooth-working partnership to the distinct advantage of the society. The S.A.S. will still benefit from the wide experience of both of them; though no longer holding active office, they still regard themselves as part and parcel of the society, the members of which have conferred on them and on Mrs. Kerr the distinction of being made honorary life members.

IN these days when nationalism crops up every so often I have wondered occasionally why our friends north of the Border have never hitched their kilts higher or straightened their sporrans and decreed among themselves that it was high time a Scottish federation of aquarists was formed. The Scottish Aquarium Society, for long the sole fishkeepers' club in the bonnie land of hills and heather, has encouraged the growth of new societies. It would, I believe, be the chief backer of any proposal to form an organisation of equal status with the federations that have their nerve centre in England, but with affiliated societies in Scotland and Wales. Ireland already has its own governing body which knows no boundary between the north and south of the Emerald Isle. With support from Edinburgh, Aberdeen and other centres where the Scots foregather

to further their knowledge of fishkeeping, such a federation could be accomplished. Maybe, there is no one individual prepared to take on the task of organising secretary.

THE decision of the National Aquarists' Society to call an extraordinary general meeting immediately before its normal monthly meeting in April was made to regularise a very pleasant duty. Unbeknown to him the Council had agreed to recommend the award of the society's Fellowship to Mr. F. G. Odams, F.R.H.S. The special meeting agreed enthusiastically with the proposal and the Fellowship certificate was handed to him. The general meeting then opened and once the minutes had been read the President, Mr. L. B. Katterns, F.R.H.S., performed another happy task by handing to Mr. Odams an inkstand as a tangible mark of appreciation for his services as treasurer.

As a former President and councillor I was very glad to be able to be there to see the presentations. Mr. Odams, whose professional duties on the staff of the Midland Bank make him ably suited to look after the growing finances of the N.A.S., has held his present office for five years. He joined the society as an associate member on the recommendation of Mrs. W. M. Meadows, when the late Mr. F. J. Boardman was in office. Later he became a full member and deemed it an honour to be invited by Mr. J. Carnell, on behalf of the society, to become treasurer when Mr. Boardman had to resign through ill-health. His cautious approach, his integrity and his modest demeanour have made him very popular as an official of the society and the members were very pleased to have the opportunity to show in some practical way that they recognise the value of his work which is done with efficiency.



Mr. F. G. Odams, left, and the N.A.S. President, Mr. L. B. Katterns, who handed over the Fellowship parchment and the presentation inkstand to the treasurer.

DR. HANS HASS has written a remarkable book (reviewed on page 159) entitled "Under the Red Sea". A film with the same title has been seen in most parts of the country. With the many calls on my time, I cannot be a regular filmgoer. If I could, I wouldn't. There's much more to be gained in the way of genuine entertainment and education by choosing the pictures you want to see.

The film in question, which I marked in my diary as a "must", captures the air of mystery which still pervades the Middle and Near East. Those intrigued by possible developments in Egypt and the areas south of it were able to see interesting shots of Port Sudan.

But the picture is not a review of the way humans exist in the arid lands bordering the Red Sea. It is a pictorial account of life under that sea.

Dr. Hass and his colleagues are seen in

the magnificent underwater pictures exploring inshore coral reefs and deeper waters further out to sea. Their skill as divers, spearmen and photographers help to make a documentary film that has all the gripping interest of a thriller or mystery story.

We see many kinds of fish including Barracudas, Rays, Pencil Fish and a wide variety of Coral Fishes, as well as outstanding close-up views of huge Marine Bats, looked upon as devils by the Sudanese fisherman, as well as sharks, with their attendant pilot fish, and other selachians. Had it been a three-dimensional film, the view of a 40 ft. long shark might have made all of us in the audience anticipate becoming second Jonahs. The information that killer fish and selachians normally only attack at night-time partly allayed our apprehensions but they were revived when an experiment to show that sharks are attracted by the panicky, hurried movements of injured fish proved successful.

Hydrophones placed on the sea bed were used to play over recorded noises including those of sirens, hooters, shell bursts, pistol shots, clanging bells, screeching brakes and other "pleasant" sounds devised by civilised peoples. The fish showed no reaction to them, just as they paid little or no attention to the intruders. When a jazz record was played, it was the human fish who could not resist disporting themselves in a fashion as grotesque as the antics of those who jitterbug in our dance halls.

The experiments in sub-marine broadcasting were not entirely fruitless. The soothing rhythm of "The Blue Danube" waltz had an extraordinary effect. Fish, in pairs, were drawn from all parts of the forest of corals, as if by a magnet, to the hydrophone by which stood Dr. Hass looking like a marine Martian in his diving mask and oxygen-breathing apparatus. Soon the twos and twos joined others. Looking as though they were on the way to a submerged Noah's Ark, they became an almost solid mass of fish which, on reaching the source of the noise, began to swim round and round in one huge circle. Were the fish responding to the regular beat of the music? Dr. Hass has the theory that they are affected by certain sound waves provided those waves follow a regular pattern. In this case the theory seemed to be put into practice by the obliging fish which, whilst forming part of one main circle, kept together species by species.

The film was made more interesting by an intelligent but unobtrusive commentary plus captions. Aquarists will have noticed that weird and unfamiliar fish were given well-known popular names which we apply to freshwater fish; for example, Angel Fish and Black Mollies. In view of his recent work off Aden, I expect Mr. Fraser-Brunner will be or has been an interested viewer of a film about a venture that has contributed much to our store of knowledge. The teeming life in the waters of warmer climes includes many species not yet known to science.



Dr. Hans Hass

From Continental Journals

Dwarf Sagittaria Identified as an *Echinodorus* Species

WRITING in a recent issue of *HET AQUARIUM* (Netherlands), Dr. de Wit records that the plant formerly called *Sagittaria microfolia* is in fact *Echinodorus tenellus*. Whilst not a *Sagittaria* it is related as it belongs to the Family *Alismaceae*—the Water Plantains. The species is one of the smallest in the *Echinodorus* Genus.

E. tenellus grows wild in Southern U.S.A., Mexico, W. Indies and tropical S. America, mainly in mud along river banks and sometimes in brackish water. It is used extensively by aquarists in Holland as a bottom covering for foreground decoration in aquariums. It is described as a "miniature lawn" in appearance. Figures accompanying the text show that the above-water leaf forms are long and narrow with triangular stalks, whilst the submerged forms usually have no flowers and the leaves and stalks are flattened and run into one another. Propagation is by means of runners after the fashion of *Vallisneria*, also by flowers, which are probably insect-pollinated. The flowers are small and pale coloured, producing seeds about 1 mm. long.

E. tenellus has in the past been confused with *E. intermedius*—the Amazon Sword Plant.—A.L.

WITH its three booklets *ZUCHTERKNIFE* ("Breeder's Tricks") D.A.T.Z. has published a very interesting collection of experiences on the breeding of the more difficult species of tropical fishes. It is hardly surprising that the first fish covered is the Neon Tetra (*Hyphessobrycon innesi*), with which the Germans have been so much more successful than we in Gt. Britain. As this species seems to intrigue every fish breeder, further remarks on this subject might not be out of place.

The German dealers apparently keep their methods not only secret but even go so far as to give misleading details. The two authors had to start from scratch with their experiments after having had negative results by following dealers' hints. With the fish species covered they have in all cases tried to study and re-create the natural breeding conditions of each and they have relied for this information mainly on a German book by Dr. W. Ladiges, "Fish and Landscape".

Here is their recipe for the breeding of Neons.* Clean an all-glass tank 10 x 10 x 10 in. thoroughly with hot water and half fill with distilled water obtained from the chemist. Collect the bark from young and thin branches of oak or alder trees and dry it thoroughly. Infuse it with boiling water (rain or distilled) and allow to cool. Filter this infusion through a 36 in. glass tube of 2 in. diameter filled with glass-wool, which should leave the slightly acidic water crystal clear. In this filtered state the liquid can be kept indefinitely provided it is placed in the dark and is well bottled.

Add sufficient of this brew to the distilled water to bring the pH value down to 6.5,

*In many details the method described follows that given by Mr. G. Bartmann during his lectures in this country last year. Mr. Bartmann's account was reported in the June 1952 issue of *WATER LIFE* (p. 146) with a slight amendment in the August issue (p. 203).

which is the exact acidity required. Add a pinch of chemically-cleaned cooking salt and cover the breeding tank with a well-cleaned glass cover. Now leave the tank for a fortnight in semi-darkness.

As plants the authors recommend *Fontinalis* and *Utricularia minor* as these do not encourage the development of bacteria. Before introduction to the tank the plants must be sterilised in a solution of one heaped teaspoonful of alum to two pints of water, in which they should be left for five minutes. After this the plants must be thoroughly rinsed in cold water which has previously been boiled. Then



Photograph (G. J. M. Timmerman) Underwater plants of *Echinodorus tenellus* (*Sagittaria microfolia*).

the plants should be put in the centre of the tank.

Now for the selection of fish for breeding. These should come from a tank containing soft water of a temperature of 70-73 deg.F. and the breeding fish should have been kept under moderate light. Watch the Neons carefully and, when they reach

breeding age (about nine months), choose the male fish which are not too violent. Catch the selected pair with a dip tube and transfer them, without surplus water, to the breeding tank which must be kept at a steady temperature of 73 deg.F. and under shaded top light.

Spawning will usually take place within the first 24 hours, and the eggs should be clearly visible on the plants. The spawning might, however, be delayed for up to five days. Under no circumstances must the fish be fed whilst in the breeding tank as this will encourage the production of bacteria. The parents have to be removed from the breeding tank immediately after spawning.

The tank should be kept in complete darkness for the first 36 hours when hatching will take place. On the fifth day after spawning start feeding on the smallest livefoods, but always feed sparingly as any unconsumed food will help the growth of bacteria and left-over nauplii might even become dangerous to the tiny fry. After a fortnight of regular feeding the fry should start to colour up to a light pink which will deepen more and more until it becomes the brilliant red area. Shortly after this the iridescent blue line will form. After four to five weeks the young Neons should have reached full colouring.

The authors promise an excellent chance of success if all their instructions are followed religiously. So the best of luck to all who would like to try.—

H. O. MUNRO

AQUATIC PRESS TOPICS

April Birth of Common Lizards Recorded

REPORTING on an early breeding of Common Lizards (*Lacerta vivipara*) captured in North Lincolnshire during the Spring of last year, Mr. R. Lawson, by having the lizard lay "eggs" on May 28, no doubt sets up a new record. Earliest birth noted previously by Dr. Malcolm Smith, was June 22. Two gravid females were among specimens caught at the beginning of April 1952. They were introduced to a vivarium with smaller females and a single male, all taken from the same locality—Market Rasen. Eight "eggs" were deposited on May 28. A day later five "eggs" hatched and the youngsters were immediately active. They took food (Greenfly) voraciously after 24 hours. Length at birth was approximately 46 mm. The remaining three "eggs" did not hatch and one of the five youngsters was devoured by a full-grown specimen which, because of its culinary interest, was subsequently removed. Mr. Lawson, who has his findings published in No. 7 of the *BRITISH JOURNAL OF HERPETOLOGY* (British Herpetological Society) suggests that the

early mating, which apparently took place around the beginning of March, was influenced by an unusually warm spell at that time last year.

MRS. T. CASSADAY lived in Japan for three years. Part of that time she had a variety of Goldfish in—to use her own words—"the most beautiful outdoor pond I have ever seen". They thrived and grew apace. Then came a severe typhoon and water overflowed one end of the pool carrying many of the fish with it. Mrs. Cassaday managed to rescue about half of them. There is an interesting sequel to this incident for three months later she removed a screen which was placed to prevent fish entering the drainaway pipe of the pool. One of the "lost" fish swam out but he was no more than a shadow of his former self. Another fish which had survived the flood and had been of comparable size three months previously was now half as large again. Lack of exercise and virtual absence of food had had their effect on the prisoner. Mrs. Cassaday's contribution appeared in a recent edition of *ANGEL NOTES*, journal of The Alamo Aquarium Society (U.S.), a fine production and a credit to its Editress, Mrs. B. W. Bradley, her assistants and the society.

**Lacerta vivipara* bears living young. It is ovoviviparous, i.e., the young develop within the female parent and break through the egg membrane at, or very soon after, being born.

News from the North-West

Sheffield Society's Hard-working President

PROFESSIONAL scientists as Presidents of societies are sometimes only patrons but Sheffield A.S. members cannot say this of Dr. F. N. Ghadiali, who is not only a scientist, but their working President, known affectionately as "Doc". Three hours before their public exhibition opened on April 8, I found him in his shirt-sleeves working like a Trojan in the cellar of the City Grammar School on his (the largest) exhibit—a vivarium. He had already made one, but it was broken in transit. *Nil desperandum*. "Doc" took off his jacket, broke up lumps of sandstone, moulded the walls, fitted a plate-glass front, man-handled a couple of 5 ft. mole-snakes out of a sack (and back again!) and in a very short time was ready to introduce Ronnie Ronalde at the public opening.

Dr. Ghadiali's research into fish-tumours is well known. He is now working on the cause of tail-fin deficiency in Zebra Fish (tailless and scissor-tail) and tells me that, although his work is not yet finished, breeding some 800 fish from many strains has indicated to him that it is a congenital condition inherited genetically from ancestors carrying the deficiency, and that it is not due to water conditions. Many tailless specimens have swim-bladder trouble, or one eye protruding more than the other. Using photofloods for illumination he has filmed the breeding display of some of his fish.

Celastranth Model

The Sheffield A. S. exhibition included a 5 ft. papier mâché model of the African *Celastranth*, very well made by Mr. K. Frost, assistant secretary. By the way, few aquarists may know that fossil bones and scales of a related species are found in the middle and lower coal measures near Wigan, and in Flintshire.

Seven tanks were put on by the special schools' section of the society. Mr. K. Lyon, a local schoolmaster, who organises this section, finds the boys (especially at King Edward Grammar School) more interested than the girls. Eighty to ninety attend the schools' section's monthly meetings in rooms provided by the Education Committee. Some parents thought the youngsters were swearing when they first mentioned "Shubunkins" in their homes! Now about twenty schools keep tanks containing Sticklebacks, Minnows and even Siamese Fighters, but there seems to be difficulty in getting them to try to breed fish, even the Three-spined Stickleback which nests readily in full view at the front of a tank. Some of the King Edward School boys have bred Zebra Fish at home.

In catering for these boys, the chief aim is to keep the cost of tanks down to the price they can afford. The society makes the frames and has the glass cut to size. The parents then glaze them or have them glazed. A helpful dustman salvaged some thin mirrors and angle irons and a member, who is a welder, did the necessary work. All these activities are outside school hours. The schools also sent in fifty entries to the aquarium show poster contest for which there were cash awards.

Experienced Aquarists Needed

In north-west Lancashire, the still-young Lytham St. Annes A.S. is meeting the growing pains of wanting to augment membership (now mostly beginners) with some good speakers and demonstrators. Mr. W. Robinson, of Warton near Preston, who founded the society, is brother of a former secretary of Blackpool and Fylde A.S. and is also an official of the latter society. He has five tanks in his home and hopes to have his own fish-house some day. He gives up a week of his holidays to look after the Blackpool society's show. The Lytham society meets on the second Friday each month at the Beech Cafe.

Many enthusiastic aquarists who do not confine their interests to fishkeeping only, find their broader interests appreciated elsewhere too. Mr. P. G. Garlick, the new chairman of the Merseyside Naturalists' Association, keeps six tropical and coldwater tanks in his Birkenhead flat and is a keen member of the Merseyside Aquarist Society. He put on the tropical fish exhibit at the M.N.A.'s Wild Life Exhibition in Birkenhead Art Gallery some time ago. He is also interested in ornithology, and spends most of the summer outside business hours at his

caravan in the Wirral countryside—calling in to attend to his fish on the way. An ex-farmer, now in business in Liverpool, he is also vice-chairman of the Institute of Exporters' Liverpool District Branch.

Lake Bala Excursion

The chief interest for aquarists when the British Association meets at Liverpool in September will be a week-end field-excursion to Lake Bala, Wales' largest natural lake, on September 5 and 6. Bala has been the subject of special post-war water life studies by the University's zoologists. As aquarists rarely have a chance to keep in coldwater tanks the lake's peculiar freshwater coregonid fish, the Gwyniad, they hope that collecting facilities may afford an opportunity. This four mile long lake also holds Perch, Pike, Roach, Eels, Grayling, Trout and Salmon, and some rare pond snails, such as *Melampus glutinosus*. To attend this excursion and the week's many other functions, it is necessary to join the Association at £3 3s. 0d. subscription, or to become an associate at £2 2s. 0d. I understand that Dr. J. W. Jones, the Liverpool zoologist, is preparing a New Naturalist handbook on the Salmon, a species on which he has worked for several years, chiefly on the Welsh Dec.—"Aquaticus".



The Sheffield A. S. secretary, Mr. A. A. Pick, with Ronnie Ronalde who opened the club's show. Here Mr. Ronalde signs the society's membership form.

Motto Adopted by the Guppy Breeders

VERSUS Tempus et Natura was the slogan adopted by the Federation of Guppy Breeders' Societies at a recent Assembly. Translated it means "Against Time and Nature". Certainly no one will quarrel with the first sentiment but whether working against Nature is the purpose of Guppy breeders is debatable. Making the best use of the natural attributes of *Lebistes* is a fair aim, seeking to develop them is a fine objective but to war with Mother Nature has all too often proved an unhappy experience. She will take kindly to encouragement with her charges but let the aquarist overstep the mark and seek to go far beyond the realms of possibility and he will soon be licking his wounds. Nothing in the F.G.B.S. suggests that the battle-royal has begun, the only signs are healthy ones, namely that its members are developing the natural characteristics of the Guppy to produce a fish of great beauty. This spirit is hardly caught in the recently-adopted Federation motto.

At the same Assembly the treasurer's report showed a satisfactory financial position with Handbook sales still proceeding well. The meeting gave unanimous approval to the idea of setting up a show committee to organise an open Guppy show.

A list of members, compiled under the headings of Officers, Judges and Lecturers, Provincial Members, Overseas Members, Eastern Counties, Cheltenham, Gloucester, South London, East Midlands, N. Surrey, Thames Valley N. London, W. London, Edinburgh and Bournemouth Societies has been issued. Useful additional information is an indication of which varieties most members keep and, where applicable, dates of section shows.

The Federation's badge is now ready. Section members can obtain them from their particular secretary, whilst provincial members should contact Mr. A. J. Holloway, 37, Garfield Road, Plaistow, London, E.13. Price is 3/- each.

Guppy breeders in the Southport, Lancs. area now have their own section started by Mr. Briant. South London section members have staged a 12-class Guppy show which was judged by Mr. H. S. White. Best fish in show was a Veiltail male shown by Mr. L. Wilson (Eastern Counties), with Mr. Johnson's Robson male a close second.

In the inter-section show championship, Eastern Counties beat N. London in March. After the judging of the Veiltail Coloured Female and Cofertail classes N. London were leading with 43 points to 32. A "walk-over" in the Golden female class, however, made Eastern Counties the winners (54-43). N. London were again defeated by being represented in only two of the four classes when they visited S. London (69-25). Messrs. Pavitt Bros., Hills and Pimcombe formed the W. London team which decisively defeated S. London at New Cross. The score was 75-23.

Northern Federation Makes Enterprising Move

SUCCESS with tropicals moves apace in the north of England and when the area organisation sees an opportunity to help aquarists, by publishing breeding accounts, full credit must go to it. The Federation of Northern Aquarium Societies has supplied the service by issuing three bulletins, Nos. 2, 3 and 4. No. 1, a survey of available information on the Tiger Barb, was published a few years ago. In each of these latest Bulletins five species are described, then an individual aquarist's success in breeding each is given. The F.N.A.S. does not suggest that the particular aquarist's experiences are by any means the only way of breeding the species mentioned. Rather the reports give one way at least in which success has been achieved.

Species covered in Bulletin 2 are *Aphyosemion bivittatum* (F. Bates), *Hemigrammus unilineatus* (Mrs. M. Hemming), *Aplochelilus lineatus* (J. Woodcock), *Mesogonistius chardon* (T. F. Whalley), *Brachydanio rerio* (G. H. Winder); in Bulletin 3, *Callichthys callichthys* (F. Bates), *Aptostogramma ramirezi* (J. Eaves), *Hypessobrycon serpe* (J. R. Taylor), *Colisa lalia* (A. Morgan), *Danio malabaricus* (D. C. Crisp) and in Bulletin 4, *Hypessobrycon trailli* (G. W. Cooke), *Rasbora maculata* (Mrs. M. Hemming), *Aphyosemion*

australe (N. A. Brown), *Budis budis* (W. Hutchinson) and *Pterophyllum scalare* (G. Mollard). The names in brackets signify the breeders. If there is one quite minor criticism it is that the author's name of the species is automatically put in brackets, e.g. *Rasbora maculata* (Duncker) which should be *Rasbora maculata* Duncker. Brackets are only used when the name of the fish has been subsequently changed. Of course, this does not detract from the practical value of the pamphlets.

Bulletins 2, 3, and 4 have been distributed free to F.N.A.S. members but to others they are 6d. per copy, with reduction for quantities ordered through society secretaries. Those interested should contact Mr. G. T. Iles, Long-sight Lodge, Redgate Lane, Manchester 12.

South Western Association

SPEAKING at the spring meeting of South Western Aquarists' Societies Association was Mr. W. H. Cotton, F.R.M.S., F.Z.S., who took as his subject "Aquarium Hygiene and Healthy Fish". Business was also discussed and at the close there was an Open Forum when questions from the floor were answered.

Manchester's Open Show Tops the Seven-hundred Entry

London Club Stages Best Furnished Tank and Best Fish

FOR the third successive year Manchester's Belle Vue was the venue for a large competitive show from May 6 to 10. The Federation of Northern Aquarium Societies staged the event but the north did not have all its own way in the competitive classes and trophies for best in show, best furnished aquarium, best coldwater fish, best Veiltail, best Fighting Fish and best breeders' Goldfish, went to exhibitors outside the area.

The success of the Hendon and Nottingham societies deserves special mention. Hendon sent up a team of entries worthy of large-scale competition, among which was an astonishingly fine Marbled Cichlid owned by Mr. D. Cannon. Leading a 35-strong class with 87½ points it went on to win the *Daily Dispatch* Challenge Trophy for best fish in show, and also the N.A.S. Challenge Trophy for best Cichlid. Further laurels for Hendon came in the club furnished aquaria section where its tropical aquarium (79 points) was awarded the Silver Challenge Trophy for best furnished tank entry, thus for the second year in succession this trophy travels south. Mrs. B. Robertshaw (75 points) and Mr. A. Sutton (75), both of Hendon, were first in the individual tropical and coldwater furnished aquaria, respectively.

Nottingham stole the thunder in the coldwater fish section where Mr. W. C. Webley's trio of Fantails took first three places in the Fantail class (pointing, 91, 90 and 84). The leader won the Silver Challenge Cup for best coldwater fish. Mr. Webley's Fantail entry in the Goldfish breeders' class was first (79 points) and was awarded the new handsomely-carved trophy given by Doncaster's Mr. and Mrs. C. Hammond for the best breeders' Goldfish.

The Northern Federation is fortunate in having the large Belle Vue hall at its disposal and good use was made of it in staging this show. All the tanks were behind black or cream facia boards. The majority were in single tiers but where there was a double bank the lower ones were positioned rather too low for comfortable viewing. The entry was up on previous years, Mr. G. T. Iles (F.N.A.S. secretary) gave the increase as 40 per cent and over 700 entries were received. Whilst generally the lighting was satisfactory, on some of the staging it was so positioned to give bottom-back illumination to the aquaria and was not the best arrangement.

Among striking special exhibits was a tank containing two "Radar Fish" of the *Mormonidae* Family. These particular specimens were of species having electric organs in their tail. The tank was connected to a loudspeaker so that visitors could hear the impulses given off. Sheffield A.S. displayed their model of a *Celacanth*.

Parties of Schoolchildren

On the Friday, the day WATER LIFE representative attended the show, large parties of schoolchildren were being shown round but attendances on that day and the Thursday was not large, although a better response was anticipated for the Saturday and Sunday. On the latter day 600 aquarists were due to attend for the F.N.A.S. Assembly, when Mr. H. Loder was the principal speaker. Throughout the duration of the show, films were periodically screened and lectures were heard from Messrs. J. Grassby, T. G. Warburton, A. Boarder, T. R. Lee, R. E. Legge, D. J. Varnom, McDowell, Iles and Riddle.

With their organising committee, Messrs. H. Hall (Festival organiser), G. W. Cooke (show secretary), F. Bentley (chief steward) and Mrs. P. D. Hammond (assistant show secretary) were responsible for the arrangements. Judges were Messrs. J. Carnell, C. W. G. Creed, R. G. Mealand, A. Boarder and H. S. White.

The standard of the furnished aquaria was not quite up to that of large southern shows as is evidenced by Hendon's three first prizes in five classes. Their tropical club entry had dark grey rock and compost. The rockwork had a slightly artificial arrangement on the right-hand side. Plants were excellent. Second was the tank of Preston Scientific Society (77½) which was spoiled by newish rock and compost and tendency to overcrowd. The back-left section of the tank was beautifully arranged. In club coldwater furnished class Blackpool's effort was ahead by 11 points. A good natural effect had been achieved

and *Lysimachia*, Nuphars and the Golden Tench stood out well against *Vallisneria*, *Fontinalis*, Hornwort and *Elodea*.

In Mrs. Robertshaw's prizewinning tank (Individual Tropical Aquaria) matured rock was relieved by careful use of fine-leaved plants, even so the rock-work was rather heavy and gave an overall sombre appearance. Only one point behind was Mr. V. Sharpe's commendable effort, which was awarded the Members' Challenge Shield. Hendon members took first and third prizes in the Individual Coldwater aquaria class. Mr. A. Sutton was an easy first. He had attempted to form the rockwork in a heap and it proved to be effective. Plants were good. Second, was Mr. H. Penhall's entry (67 points) and third, Mr. Cannon's (65). Only four entries came forward in the Junior Tropical aquaria class. First was Mr. B. Conroy with 73 points. Second was Mr. I. Downhill who lost points for sharp slanted-work.

Amended Rule for One Section

The coldwater fish section was definitely an improvement on last year, due, no doubt, to an amendment to the rule operating last year which restricted exhibitors to one entry per class. The leading fish and winner of the Challenge Trophy in the Common and Comet Goldfish class was a Common of good colour but with a few silver scales on one side. It was exhibited by Mr. J. Dodsworth (83 points). Second was Mr. R. Wiltshaw (79) and third, Mr. F. Horrocks. The judge, Mr. A. Boarder, thought at least one other fish would have been amongst the leaders had the water been clear at the time of judging.

Of the 21 Shubunkins, Mr. J. Dodsworth's was the best (74 points); it won the Goldfish Society (N.W. Section) Silver Challenge Cup. Second was a really good fish but it had a split caudal fin. This exhibit was shown by Mr. A. T. Thompson (73 points). Mr. H. North's entries were first and second in the Moor class. The leading fish gained 86 points and was better than the second (77 points) on finnage. Showing plenty of colour and a nice spread of finnage, Mr. W. L. Mandeville's entry came first in the Veiltail class (77 points) and won the G.S.G.B. Challenge Trophy. Second was Mr. H. North's exhibit which failed on colour and deportment (75). Only one fish was awarded a card in the small A.O.V. Goldfish class. This was an Oranda (77 points) with excellent headpiece, shown by Mr. H. North. There was little to choose between the two Sunfish which came first and second in the A.O.V. Coldwater Fish class. They were owned by Mr. J. Bulley (Hendon) and Messrs. Ryan and Womersley respectively.

Few fish of outstanding merit were on show in the Guppy section although Mr. A. J. Holloway of E. London club had a successful day with *Cofertails* which came first and third (71 and 65 points) and two Gold females that were placed first and second (86 and 84). It was an F.G.B.S. provincial member who staged the best Guppy and won the Challenge Cup. The fish was a spanking 86½-point Doublesword shown by Mr. R. Rawlinson. Mr. Whitecross showed the best Scarftail. In the Coloured Female class one of Mr. A. L. Judge's team led with 75 points.

All other livebearers were shown in pairs. Topping this section were Messrs. A. N. & K. Rycroft's lovely *M. vittata*, which took the Cup for best pair of livebearers (90 points). They were some of the best seen and had really sparkling colour and very good body shape. The male's dorsal development was very good. A. N. & K. Rycroft also led the Platy class (88½ points). Of the first four cards given to Swordtail pairs three were awarded to Red-eyed Reds. First two places went to Mr. R. Rawlinson's fish, the leaders having extremely good colour and remarkably fine size for this variety, although the male sword was small. Only three entries

were made in the A.O.S. Livebearer class, Mr. W. Dann's first prizewinning Mosquito Fish with good colour definition gaining first place.

Among the small Egglayers section (shown in pairs) the 25-strong *Hypessobrycon* class was led by Messrs. Park and Livingstone's Flame Fish (86 points), good fish but one had a torn caudal on the Friday. They gained a Challenge Cup. Second were Mr. W. Hutchinson's *H. serpa* (85½), well grown and with good colour definition. Two extremely well-sized *H. pulcher* led the *Hemigrammus* class for Mr. V. E. Scoffin with 87 points. There were some really fine exhibits in the A.O.S. Characin class and the leaders were top quality. First was a faultless pair of *Metynnis schreini* (90) shown by Mr. J. R. Shaw. Second and third places were taken by the same exhibitor with Black Widows (89½) and *Metynnis roosevelti* (87½). Among the Nigger, Tiger and Ticto Barbs, a pair of Niggers (83) shown by Mr. C. N. Linford, and two pairs of Tigers (82 and 81½), staged by Messrs. W. L. Mandeville and W. Sharp were the leaders. Running close in the A.O.S. Barb class were Spanner Barbs (82½) shown by Mr. C. E. Cotton, Cherry Barbs (81½) shown by Mr. G. Dillon and smallish but well-matched Checker Barbs (81) shown by Mr. L. Wardle.

Harlequin Fish took first and second places in the *Rasbora* class. They were exhibited by Mr. E. Scoffin (87) and Mr. R. Skipper (85). The first prizewinners had better finish particularly in the finnage. A well-coloured pair of Pearls shown by Mr. N. Bell (86½) (although the female was very full bodied) led the White Cloud and Dario class. *Corydoras aeneus*, with 87 points, owned by Mrs. M. Hemming, were first prizewinners in the class for Catfish and Loaches.

A class of outstanding merit was that for Egg-laying Tooth Carps with 25 entries and the first three prizewinners with 92, 89, 88 points respectively. First were Mr. F. Bates' *Epiplatys macrostigma*, which gained the trophy for best egg-laying tropical pair, followed by *Apocheilichthys lineatus* in second and third places shown by Messrs. G. W. Cooke and R. Gill. Black-banded Sunfish, exhibited by Mr. J. R. Shaw were first in the A.O.S. Small Egg-layer class.

Red Fighters Win Trophy

Fighting Fish were of good quality, a pair of Reds came first (81 points) owned by Mrs. M. Hemming (Bland Challenge Trophy). Behind just a little on colour were Mr. H. G. Rundle's Red pair with 80½ points. Excellent fish were entered in the A.O.S. Labyrinth class with 30 entries. Leading were Mr. C. N. Linford's Leeri with excellent colour and fine development (91½) points and Open Challenge Trophy, Mr. G. J. Dorrain's Blue Gouramies were almost as good (90 points).

Twenty-seven entries faced the judges in the Angel Fish class. Mr. A. G. Cornack's fish was adjudged leader with 87½ points and took the Silver Challenge Cup for best Angel Fish. It was a lovely fish with only the pectorals a trifle crooked. *Aristogramma rambrozi* of quite dazzling colour, royal blue on sides and green around the gills, was first (83) in the Dwarf Cichlid class. Following Mr. Cannon's best-in-show Marbled Cichlid in the A.O.S. Cichlid class, *Cichlasoma severum* (Mr. S. Davies) and Fire-mouth (P. E. Woodall) were second and third in this 35-strong class.

In the Breeders' Livebearer classes, Mr. H. Hall's Tuxedo Swords, Mr. F. Taylor's even team of Black Mollies and Mr. A. W. Engleke's Guppies gained firsts, the Mollies winning a Challenge Trophy. Promising young Cherris headed the Barb Breeders' class. They were shown by Mr. J. Woodcock. A pity that the Nigger x Rosy hybrids listed were not benched. Mr. N. Bell's Glowlight team (90) had very good size and matching. They were first in the Breeders' A.S. Characins with another batch of Glowlights (Continued on page 166.)



Trophy for best breeders' Goldfish.

Constructive Decisions at Judges' Conference

F.B.A.S. Welcome Delegates from Northern Federation

Committee to Concentrate on New Standards?

THE general opinion amongst those who took part in the 1953 Judges' Conference, sponsored by the Federation of British Aquatic Societies, was that, whereas last year's meeting was exploratory, this time more constructive work was done. Mr. T. E. Butt, F.B.A.S. chairman, who presided at tea, welcomed all who attended.

At the Assembly preceding the Conference, standards were discussed. It was satisfying to learn from the Conference chairman, Mr. P. S. Campkin (chairman of the Judges and Standards Committee), that the committee hoped to produce further standards in due course. Mr. R. E. V. Billings' motion thanking Mr. J. H. Gloyn for organising the Conference was passed unanimously. On the proposal of Mr. D. Pullon, seconded by Mr. W. J. Christian, the 1952 Conference report was adopted.

Report on Year's Work

Mr. Gloyn reported on the year's work of the Judges and Standards Committee. Members made 110 out of 125 possible attendances at 16 meetings. Many matters had been dealt with and the Wagtail Swordtail standard produced. At the 1952 examination for new judges, nine gained 16 grade B awards, and 15 grade A awards. More recently 10 grade B judges had obtained 25 grade A promotions. The badge which had been considered last year would be issued shortly, the design embodying the Federation motif with a blue surround, the colour of the fish being red for judges; blue, council members; green, lecturers, and the remainder, black.

The provisional points system for fish for which there were no standards had worked well and the star scheme had met with a good response. Rulings were made in respect of double anal Goldfish, Cryptocorynes in plant classes and ownership of fish and plants in furnished aquaria classes. A display had been staged at the 1952 WATER LIFE show. Interest had been shown in the formation of a judges' panel for the Portsmouth area.

Mr. Campkin pointed out that the committee's recommendations were submitted to the F.B.A.S. Council which obtained ratification from General Assemblies. Answering Mr. M. Welch, Mr. Gloyn said "A" in the panel of Judges signified approval for open show duty and "B" for club show duty.

Judging Furnished Aquaria

Mr. W. C. Webley proposed and Mr. S. T. Jelly seconded that the committee should consider modifying the regulations so that a judge could adjudicate in both tropical and coldwater furnished aquaria classes. This was carried, it being pointed out that 75 per cent of the marks were for matters common to both and that frequently judges were asked to select the best aquarium in the show. The views that the part played by the fish in earning points should not be overlooked and that, at the larger shows, at least one of the judges should be qualified to assess the kind of fish exhibited in the class also gained support.

Introducing the item "Furnished Aquaria", Mr. Gloyn explained that in 1951 and 1952 F.B.A.S. judges had officiated at the British Aquarists' Festival in Manchester. Letters had passed between members of both the F.B.A.S. and the Federation of Northern Aquarium Societies and, by the end of 1952, official correspondence between the two committees. The Judges Committee of the F.N.A.S. proposed modifications to furnished aquaria class pointings. His committee favoured the proposals and had invited F.N.A.S. committee members to attend this Conference. Mr. E. Chapman stated that the F.N.A.S. has used F.B.A.S. standards for some time. They felt that in certain cases they could be amended with advantage. Mr. R. E. Legge said his Federation appreciated the work done by the Judges and Standards Committee of the

F.B.A.S. His committee wished to come into line with the south. They considered the furnished aquaria section the only truly creative branch of the hobby and the most attractive. The north were behind in the matter of plants but ahead in respect of rockwork, which, he felt, the F.B.A.S. had neglected somewhat. He showed how the suggestions would work. The discussion brought forth expressions of goodwill from representatives of both Federations and some points raised on judging furnished aquaria were thought worthy of further consideration.

The committee announced that the diploma scheme would become operative soon. The opinion was that the diploma should be awarded for an outstanding breeding achievement but not necessarily confined to the breeders' classes.

Mr. J. Carnell said that to put the committee's ideas on tropical breeders' classes into practice had proved to be harder than anticipated but an advanced stage had been reached. Rules had been drawn up with a system of pointing. A maximum of 20 points would be awarded for difficulty of breeding in accordance with a fixed schedule covering over 200 varieties, the remaining 80 being awarded at the judge's discretion



Three lady judges join the menfolk in their deliberations at the 1953 F.B.A.S. Judges' Conference.

with maxima as follows: Size for age, 20; colour and quality according to species, 20; matching, 20; condition and deportment, 20. The view that egg-layers and livebearers should be shown in separate classes was approved. Capt. L. C. Betts thought the idea looked good but stated that the Goldfish Society of Great Britain considered that the number of fish in the coldwater breeders' class should be reduced to four. After discussion Mr. Campkin gave the assurance that when the coldwater class rules were considered the views of the G.S.G.B. would be sought before any decisions were made.

A discussion took place whether *Mesogonistius chelidon* should be classified as a tropical or coldwater fish. The general opinion favoured exhibiting it in the coldwater section.

A plea was entered that the furnished aquaria class should not be tied up by too many rules so that competitors should have full freedom to show their individuality. It was pointed out that societies could invite anyone they wished to judge for themselves but if an authorised judge failed to maintain a satisfactory standard his name could be removed from the list. The panel did, therefore, constitute a guarantee of ability and integrity.

Mr. R. O. B. List, wished it to be recorded that the F.B.A.S. were pleased to have F.N.A.S. officials present, expressing the hope that the two organisations whose aims were the same, would continue to co-operate. Mr. H. Loder in reply said his committee wished such co-operation to improve. Capt. Betts proposed a vote of thanks to Mr. Campkin for the excellent way he had conducted the conference as its chairman.

In addition to those mentioned in the report, the following were present: Mesdames W. M. Meadows, B. Robertson and R. H. Wood;

Messrs. C. W. G. Creed, J. E. Edwards, S. Harker, H. R. Holland, P. Hewitt, A. G. Jessop, A. Lambert, C. R. Looker, H. P. Lynn, R. G. Mealand, S. B. Moore, W. G. Phillips, H. E. Riddle, A. Snape (F.N.A.S.) and N. E. Wmsley.

Capt. Betts has, on occasion, expressed the opinion that there is a preponderance of members with a bias towards tropical fishes on the J. and S. committee. He has strong views on the virtue of reducing breeders' teams of coldwater fishes, particularly exhibition Goldfish, from six to four. At the conference the reduction was not favoured by Mr. A. Boarder. This particular discussion, Mr. Campkin has stated subsequent to the conference, reflects the fact that when teams of six were proposed initially the F.B.A.S. was legislating primarily for tropicals. He reiterates that when rules for coldwater breeders' classes are put forward for approval or amendment an effort will be made to consult specialist societies.

Certificates of Competence?

It had been the intention of Mr. W. L. Mandeville of the Midland Association of Aquarists' Societies to propose the issue of certificates of competence to qualified judges. Family illness prevented his attendance and the matter was not discussed. Mr. Mandeville believes there is a need for national authority which role the F.B.A.S. could fulfil. He thinks, however, that at present its influence is largely metropolitan, whereas its policy should embrace interests extending all over the country. The official reply to these views seems to be that the F.B.A.S. has machinery to ensure recognition of competent judges only, their acceptance being

dependent on their personality as well as their ability to place awards. The F.B.A.S. recognises the value of refraining from appointing a judge to "A" status until the appropriate specialist society has been consulted.

What are the lessons to be learned from the conference? The procedure to preserve a democratic policy will function properly if delegates at the Assemblies give due consideration to the committee's recommendations and the council's reports on them, rather than accept them automatically, and if individual judges take advantage of their rights to forward their opinions and views to the committee for its attention.

Status of Committee

The conferences will grow in importance when it is recognised that their object is not solely to let judges bear what the committee has done but to give at least one opportunity each year for approved judges to debate, in person, motions they put forward based on experience gained at judging engagements. The conference should be the place where recognised judges have the opportunity to advocate the overall policy, the committee's responsibility being to work out the details so that any decisions made can be implemented in a practicable manner. The committee can be, and is, by reason of its good work, of considerable influence to the exhibition side of our hobby, but its authority is of course dependent upon the sanction of clubs affiliated to the Federation given through delegates at the Assemblies. What is not certain is whether individual judges on the panel enjoy quite the same amount of direct control over the committee's deliberations as do the club delegates. The closer co-operation between the two Federations could be a prelude to their amalgamation.

Aquarists' Internationale

Further Items from Correspondence
Received by R. W. Andrews

MR. Rodney Jonklaas, Zoological Gardens, Ceylon, gives a description of a 14 days' trip to Ceylon's remotest jungle area, on an official expedition to collect Pelicans, Ibis and other aquatic birds. He lived in a native hut where unfortunately he contracted some fearful abscesses and spent eight days in agony on a mat, unable to shoot, fish or even travel. However, he did manage to collect and bring back alive 53 various species of birds. Method of travel was by cart, lorry, and finally rail. He also managed some superb light tackle fishing for Snappers (*Lutjanus argentimaculatus*), Jacks (*Caranx* sp.) and some ten-pounders (*Elops indicus*). The last-mentioned fish are miniature Tarpons and continually leap out of water when hooked.

Many interesting hours were usefully employed in wallowing about in vast salt lagoons catching

many types of crabs and prawns with a cast-net. More exciting encounters were being experienced with wild elephants, buffaloes and even a leopard. Mr. Jonklaas was very disappointed in not coming across any specimens of a queer fish, the Upside-down Eleotris. He comments "These Eleotris are darned difficult to find when one wants them."

Mme. du Breuil, Hong Kong, informed Mr. Andrews that she has achieved a successful shipment of live newts, by air, to Dr. G. Myers (U.S.A.). It is believed that this species of newt, *Cynops chinenses* Grey, has rarely been imported alive into the United States. The newts for the special shipment were collected locally by Mr. Romer (presumably J. D. Romer who, before leaving England for the Far East, contributed an article on Indian Aquatic Snakes, in the April, 1946, issue of WATER LIFE.) Mr. Romer stated that they are quite easy to catch as they live in very shallow mountain streams. The only snag is that the streams are all located at 1,000 feet or higher, but although it is a stiff climb to reach them, the reward is worth it.

Interesting Programme for Goldfish Society's A.G.M.

PRESENT at the April 23 committee meeting of the Goldfish Society of Great Britain was Mr. Strachan Kerr, its Scottish President. He was welcomed by the chairman, Capt. L. C. Betts. To regularise the election of officers it was decided that Messrs. Birkenhead and Saunders should retire this year, Capt. Betts and Mr. Cluse next year and Messrs. Sumbler and Wilson in 1955.

The A.G.M. will be held on June 27 in the Feathers Hotel, St. James' Square, Broadway, S.W.1. After formal business a table show has been arranged, the class for adult Singletails being judged by Capt. Betts and Mr. Saunders

and the class for 1952 Twintails by Messrs. Saunders and Wilson. Whilst judging is in progress Mr. E. G. Weatherley will demonstrate hand-spawning and Mr. R. J. Affleck will give an illustrated talk on "Colour Pattern in Fishes".

The balance sheet covering last year discloses a considerably smaller balance in hand. The expenses of the society work out at £1 per member per annum at present and at the May 7 committee meeting the question of methods of raising extra funds was discussed, including the possibility of increasing the annual subscription. The whole matter will be considered at the next committee meeting (June 18).

ARISING out of a challenge made some few years back, every so often members of East London A. & P.A. put down a team of livebearers against a similar team staged by Mr. R. G. Mealand, the well-known judge of Putney, London, S.W., who has kept and bred livebearers on a large scale for a considerable time. This year the competition has been deferred at least until July, when it is hoped that both sides in the contest will be able to exhibit four pairs each of Mollies, Swordtails, and Platies, together with four pairs of any other tropical species. Mr. Mealand has given a good account of himself in the past and the East London members appreciate that they have to get together a team of quality seriously to challenge his carefully chosen specimens.

REFERENCE was made in our April issue to the new magazine, *Ichthys*, published in Spanish from Buenos Aires, edited by Mr. Jorge O. Speroni. We have since learned from Mr. J. Churchill Hopgood of Havana, Cuba, that he is to be the Editor of *Acuario*, another new magazine written in Spanish. It will deal chiefly with tropical fishkeeping.

Manchester Show

(Continued from page 164)

(89), shown by Mr. G. W. Cooke, second. Among the Breeders' Anabantids, Mr. F. Taylor's Pearls were the leaders (85). Another class offering really stiff competition was that for A.O.S. Tropical Egglayers. In the lead was the really excellent entry of Mr. F. Bates (*Aphyosemion caruleum*, 95 points and winners of two Challenge Trophies). The same exhibitor was second with *Rivulus strigatus* (88).

Some of the entries in the plant section were not of especial merit. First prizewinners were Dr. F. N. Ghadially with *V. spiralis* var. *torta* of robust growth but not too good twisting. Mr. E. W. Aubrook with study *C. cordata*, Mr. C. R. Perry with a *Naphar* of even development and no coarseness and Dr. Ghadially again with *Cobombia*, having large fronds too widely spaced. Mr. Aubrook won the Silver Challenge Cup in this section.

The John East Memorial Trophy (awarded to the affiliated society gaining the highest number of points in the show) went to Newcastle-upon-Tyne A.S. with 27 points. Belle Vue and Blackpool tied for second place with 25 points.

F.B.A.S. Flood Fund Grows

FROM over £35 collected, almost as soon as the appeal was launched, the figure had grown in a month to more than £60 and there is now hope that it will reach £100. Sponsored by the Federation of British Aquatic Societies, it will help those aquarists in the flood areas who, last February, lost valuable fish and equipment. A token amount is also being sent to help Dutch aquarists who experienced losses at the same time. Claims in the hands of the F.B.A.S. are now being considered and payments will be made shortly.

Rubber Suction Discs

A WARNING was given by Miss A. Gurney of Bath in our last issue about the use of unsuitable rubber suction discs. The agents of "Limpet" thermometers submitted a sample disc to Mr. W. H. Cotton who had given the original adverse report which Miss Gurney quoted. Mr. Cotton has now informed Messrs. Robnay, the agents, that the green suction disc which was sent him was subjected to a rigorous toxicity test of 72 hours at 55-60 deg.F. and 76 hours at 75-80 deg.F. in aquarium waters. In neither case was there the slightest trace of toxicity. The rubber from which this disc is made appears to be chemically inert and should be safe in all circumstances.

CHARACINS and Shubunkins were the subject of a talk by Mr. C. E. C. Cole at the May 19 West Middlesex A.S. meeting. Show winners were: Characins 1, 2, Wood, 3, Salter. Shubunkins 1, Dodge, 2, Wood.

THIRTY-TWO members have joined the new Standard-Koister A.S. The secretary is Mr. A. J. Camp, who is busy getting out a full programme.

WE learn that Messrs. Whitwell & Smykala of West Bergholt, Essex, are opening a London branch. What is of particular interest is that it will be on the same premises as those used by the London branch of Scottish Fisheries Ltd., at 61, Grafton Road, N.W.5.

London's Coronation Show

CLUBS have responded well to the National Aquarists' Society's Coronation Cup competition which will be staged along with over forty other classes, in the Sixth N.A.S. Open Show from June 11-13 at the Royal Horticultural Hall, Vincent Square, Westminster, S.W.1. Twenty-one clubs in all have taken up the challenge. Entries are in the region of 950, a record for this leading show. Solely through lack of space nearly 300 entries have had to be returned. The number of Barbs (60) exceeds expectations, the Veitral Goldfish entries are promising, the Guppy section will be a good one and the plant classes are well supported. The organisers had thought that there would have been better support for some of the coldwater classes but even so that section will contain a number of first-class specimens. WATER LIFE will be represented at the event which is open from 2 p.m. to 10 p.m. on the Thursday; 10 a.m. to 10 p.m. on the Friday; and 10 a.m. to 8 p.m. on the Saturday. Admission is 2/6d., and 1/- for children under 14. Nearest Underground stations are Victoria and St. James' Park.

Mr. E. J. Gage has now assumed the post of N.A.S. Bulletin editor, with Mr. J. W. Dimmock, associate editor. This change of positions—Mr. Dimmock was formerly editor and Mr. Gage his assistant—has been caused by illness and many calls on the time of Mr. Dimmock. In May members heard Mr. B. M. Smith talk on "Reptiles as Pets".

London Herpetologists' Activities

HERPETOLOGISTS in the London area are well served by the London Group of the British Herpetological Society. During the months of April and May, amphibians, lizards and snakes have been discussed at its meetings. "Reptiles and Amphibians in Art and Literature" is the subject to be dealt with at the June 22 gathering which will be held in the Linnean Society's Rooms, Burlington House, Piccadilly, W.1 at 7 p.m. Meetings have also been arranged for September 18, October 26 and December 4. Those in September and December will be held in Burlington House but on October 26, the meeting room of the Zoological Society of London, Regent's Park; N.W.8, is the venue. Interested naturalists should get in touch with the new secretary, Miss J. B. Callow, 2, St. Mary's Avenue, Teddington, Middlesex.

Dutch National Congress

A VERY high compliment has been paid to Mr. C. W. G. Creed, F.Z.S., F.R.H.S. by our Dutch contemporaries. The Netherlands Federation (N.B.A.T.) is holding a National Congress of Aquarists at Haarlem on August 14, 15 and 16, the organisation being in the hands of the Haarlem A.S.

At the suggestion of Dr. Lodewijks, President of the N.B.A.T. and the World Union of Aquarists, the organisers have extended, through their President, Mr. E. Prager, and secretary, Mr. N. G. Michielson, an invitation to Mr. Creed not only to attend but to lecture on British methods of judging tropical fishes and to cooperate with Dutch judges in selecting the best fish entered in the show which is being staged. A competitive display is a new departure for Holland.

The event is to be opened by the Lord Mayor of Haarlem and the programme includes lectures, films and a dinner. The opportunity given to Mr. Creed has been readily accepted by him and, as he is a member of the Council and of the Judges and Standards Committee of the Federation of British Aquatic Societies, he will, no doubt, be able to explain in detail the show standards of the F.B.A.S. and the approved methods of judging employed at British aquaria shows.

A SHORT while ago the Melbourne Aquarium was completely reorganised under the direction of Mr. A. C. Jones and it was hoped that it would become one of the show places for aquarists in Australia. Now comes the unhappy news that the Aquarium was destroyed by fire with a big loss. Mr. Jones has seen the destruction of valuable fish and equipment but most of the expense of rebuilding the establishment will fall on the trustees of the exhibition building.

Club Notes and News

The Editor invites clubs to send brief reports of meetings and announcements of forthcoming events for publication. Items for the August-September issue should reach this office by July 10.

MEMBERS of Coventry P. & A.S. have presented an aquarium to the children's ward of Goulson Hospital. Mr. Mandeville spoke at the April meeting and on May 13 a table show was organised. Members of Banbury society visited the May meeting. From July 2-4 a show is being held in Coventry.

THERE have been table shows for species of livebearers and Guppies alone at recent meetings of Southhampton A.S. The former was judged by Mr. Edwards, who also gave a lecture, and the latter by Dr. R. C. C. Clay.

ON May 16-17 the second annual show of Rochdale A.S. was held. During the same month a furnished tropical aquarium was presented to the Children's Orthopaedic Hospital at Norden. Mr. McDowell has given an interesting talk on "Plants."

AS part of the local Coronation festivities the Northenden Community Assoc. A.C. is staging a club show between its members and those of the Altrincham society. Furnished aquaria will also be displayed at the event.

FOURTH annual open show of furnished aquaria arranged by Accrington A.S. will be staged in the Town Hall from September 3-6. Particulars can be had from Mr. S. Ratcliffe, 4 Rutland Street, Accrington. Mr. Annes spoke in April and a visit to the B.A.P. was made in May.

OPEN classes in the Bethnal Green A.S. fourth annual show on September 11-12 are club coldwater and tropical furnished aquaria and breeders' egg-layers, livebearers and coldwater. There will also be a competition for male Siamese Fighters, where an open challenge cup will be awarded. Show schedules are obtainable from Mr. W. Richardson, 98 Warner Place, Bethnal Green, London, E.2.

SECRETARY of the Eltham College Ichthyological Society is Mr. I. C. Ewers, Eltham College, Moornham, London, S.E.9. The club has staged two successful exhibitions since its inauguration.

THE Battersea A.S. shared its meetings with the Brixton Club on May 8 and 15. Show secretary of Battersea is Mr. D. E. Taylor, 33 Kersley Street, London, S.W.11. On June 16-17 a small display will be put on in Battersea Town Hall in conjunction with a Hobbies Exhibition.

MCLYNN'S Aquarium, Ewhurst, was visited by Gravesend A.S. on May 3. At a meeting later in the month Mr. A. Boarder spoke on "Coldwater Fish." The Anglo-Saxon Hall, Berkeley Road, Gravesend, is the venue for a show of coldwater and tropical fish on July 11.

THE Prestwich A.S. staged a show of furnished aquaria during May.

TWO meetings each month are now arranged by Plymouth A. & P.S. at 50 Ebrington Street, Plymouth. On the first Tuesday the meeting is formal and on the second Thursday, informal. Visiting aquarists are invited to attend these fixtures. Two recent lecturers have been Messrs. Nichols and Franks.

MEETINGS of Dunstable A.S. are held on the fourth Tuesday of each month in Priory House, Dunstable. The secretary

conducted a WATER LIFE quiz on April 28, and a table show for Danios was won by Mr. M. A. Green.

PRESENT secretary of Hampstead A.S. is Mr. K. J. A. Pye, 35 Steeles Road, Hampstead, London, N.W.3.

NEW name of the Catford A.R. & P.S. is the Catford Aquarists' Society. Present secretary is Mr. V. L. A. Hutchins, 28 Trewsbury Road, Sydenham, London, S.E.26.

THE Mayor of Willesden was present at the dinner of Willesden A.C. held on May 16, when the club trophies were presented. All officials were re-elected at the A.G.M.

A WATER LIFE diploma will be awarded for the best fish in show at the third annual exhibition of Wembley A. & P.A. to be held on July 1-4.

VARIED programmes have been enjoyed by members of Southport A.S. during April and May. At the April fixture there was an auction, distribution of Mikro-worm cultures, a table show and a Brains Trust, whilst in May a quiz was arranged and two strip films shown. Chester Zoo will be visited in June.

A BERLIN Sword, and a Red Platy won firsts for Mr. E. Coleman and Miss A. Fenton at the May table show of Scarborough A.S., which was judged by Mr. D. Scarfe. Mr. F. Wardlaw gave an interesting talk on "Coldwater Fish and Relative Changes in Water Temperatures" at the April meeting. In June the table show will be for Guppies and Black Widows.

THE Hastings & St. Leonards A.S. (previously St. Leonards F.S.) now holds its meetings on alternate Wednesdays at the Cinema Café, Norman Road. Visiting aquarists will be welcomed. The club recently held a guest night when 50 local aquarists enjoyed a programme which included the Harrow A.S. technicolor film. Other interesting activities have included an illustrated talk on "Infusoria," and a lecture by Mr. Collins



"THERE'S NO HOLDING HIM SINCE HE SAW 'GOD SAVE THE QUEEN' IN NEON LIGHTS".

in which he discussed the possibility of keeping cuttlefish and squids in marine tanks. Twelve aquariums are now maintained in the St. Helen's Hospital in association with the League of Friends. A number of tanks will be put up in the July Hobbies Exhibition.

OFFICERS elected at the A.G.M. of Kettering A.S. were Mr. Brigstock, vice-president; Mr. Bradbury, chairman; Mr. Sharp, secretary; Mr. Simmons, show secretary and Mr. Harris, treasurer. The first annual show was held on May 28-30. This year's outing will be to Colchester.

MEMBERS of the Southend, Leigh A.S. visited a Surrey breeder's establishment on May 17. A Twenty Questions' session was arranged for May 5 and a talk on "Breeding Fish" for May 19. Table shows were held both evenings.

THE well-attended April 4 meeting of Kingston A.S. heard Mr. L. B. Katterns speak on "Pond Construction." Classes for Characins, Mollies and London and Bristol Shubunkins were put on by the society at its April 16 table show. Judges were supplied by A.S.L.A.S.

AT the June meeting of the East Midlands Section of the Guppy Federation classes will be put on for Pintails, Speartails, and Grey Females. In July the varieties catered for are Scarftails, Veiltails and Gold Females.

SECRETARY of the Handley Page A.S. is Mr. T. A. Leighton, 128 King Henry's Road, London, N.W.3.

FROM April 7-11 Torquay A. & P.S. held its second annual show. There were 38 classes and winner of the WATER LIFE diploma for best coldwater fish in show was Mr. I. Cook with a Bristol Shubunkin.

MRS. W. M. MEADOWS spoke on "Breeding Egg-layers" at a recent meeting of Hornchurch & District Aquarium Society. The club meets fortnightly and the next gathering will be on June 3 at the British Legion H.Q., High Street, Hornchurch, Essex.

NEW officials appointed at the A.G.M. of Croyley A.S. were President and chairman, Mr. Swift; secretary, Mr. J. V. Weight, 48 Gonville Avenue, Croyley Green, Herts.; treasurer, Mr. R. Birley and show secretary, Mr. Robinson. Meetings are held at the "Coach and Horses," Croyley Green. An epistalope lecture was given by Mr. A. W. Blanchard at the April 14 meeting.

THE collection of Cichlids owned by Mr. Stoker of the Grange Hotel, Sutton, was seen by members of Sutton & Cheam A.C. on April 19. Meetings are now held every Tuesday. First prizewinner in the home aquaria competition was Mrs. Schofield.

ON the evening of June 4 the Friends (Herne Hill) A.S. is staging a table show for tropical and coldwater fish in St. Jude's Hall, Herne Hill, London, S.E. First prizewinner at the April 9 show was Mr. T. Browne.

THE annual show of East London A. & P.A. will be staged from September 24-26 in St. Margaret's Hall, Ripple Road, Barking.

AS part of the local Hobbies Exhibition on April 20-25, the Stirling A.S. set up a display.

BLACKBURN Rotary Club put on a Coronation Hobbies Exhibition from April 20-25 and Blackburn A.S. staged a display at the event. This aquarist society will hold a show from August 12-16, when there will be sections for furnished aquaria, livebearers and egg-layers. Aquarists interested in exhibiting should contact Mr. J. W. Sharples, 12 Higher Witton Road, Blackburn.

(Continued next page.)

Club Notes and News

— continued —

IN the new town of **Basidon**, Essex, Mr. R. C. Barnes, 46 Elsenham Crescent, Vange, Basidon, is hoping to form an aquarists' society. Anyone interested should contact him.

AN executive committee was elected at the April meeting of **Lytham St. Annes A.S.** During the same evening there was a table show won by Mr. Paterson and judged by Messrs. Higginson and Horrocks. Members also heard a talk by Mr. and Mrs. Higginson on "Gazing and Furnishing an Aquarium."

MEETINGS of **Birkenhead A. & H.S.** are held on the second Wednesday of each month, at the Conservative Rooms, Bedford Road, Rock Ferry. New secretary is Miss J. M. Byrne, 5 Hartington Avenue, Birkenhead. During April Mr. A. Bland gave an illustrated lecture on "Coldwater Fish."

"**PLANTS**" and "Guppies and Guppy Standards" were titles of lectures given by Messrs. C. Ward and J. E. Edwards at recent meetings of **Croydon Tropical Breeders' Circle**.

SECRETARY of the **Midland A. & P.S.** Mr. T. L. Dodge, gave a talk on "Show Standards of Coldwater Fish" at the April meeting of **Shirley and S. Birmingham A.S.**

THE **Stretford A.S.** has come into being and persons interested should contact Mr. H. Hindley, 35 Westwood Road, Stretford, Lancs.

SCHEDULES for the annual open show of **Portsmouth A.C.** (August 6-8) can be obtained from Mr. G. F. Elverson, 24 Bertie Road, Milton, Portsmouth. The event will be staged in the R.E. Drill Hall. Members have heard a talk from Mr. Snell on "Spawning and Rearing Coldwater Fish." First prizewinners in a table show were Messrs. F. G. G. Lush and A. Sommers.

WINNER of two first prizes in the April table show of **Halifax A.S.** was Mr. A. J. L. Rashley. The classes were for Guppies and A.O.S. Livebearers.

THE **High Wycombe A.S.** ran a two-week show from May 16-30.

SEPTEMBER 24-26 are the dates of the **Banbury A.S.** Coronation Year Show. It is a radius event restricted to exhibitors residing within 25 miles of Banbury. Two **WATER LIFE** diplomas will be up for competition.

ON the second Tuesday of each month the **Luton A. & P.S.** meets in Beech Hill Girls' School, Beech Hill, Dunstable Road, Luton.

A NON-COMPETITIVE exhibition is being staged by **Workington A.S.** at the Central Hotel, Workington, from June 3-6. The Harrow A.C. film was shown at the April 13 meeting.

TWENTY-TWO open classes comprise the annual three-day show of **Romford A.S.** running from August 20-22 at the Lambourne Hall, Western Road, Romford. Schedules can be obtained from Mr. A. E. Falkus, 37a Wallenger Avenue, Gidea Park, Romford, Essex.

A CLASS for marine aquaria is included in the schedule for the **Hendon A.S.** annual open furnished show on August 3-8. Further details are available from Mr. B. Calrow, 6 Axholme Avenue, Edgware, Middx.

THE **Stoke Newington A.S.** and **Harnsey and Tottenham societies** hold periodic inter-club table shows. **Stoke Newington** were the hosts on April 27. The same three clubs visited **Shirley Aquatics** on May 10.

WINNER in the home aquaria competition of **Cardiff A.C.** was Mr. H. Price. Judges officiating were Messrs. C. Chant and K. Barker.

MR. OGIIVIE, of Kennoway, gave a talk on "Tropical Fish" at the April 6 meeting of **East of Fife A.S.** Members visited the Commercial Hotel, Upper Largo, on May 4, to view the four tanks which the proprietor had installed in the public lounge. Six tanks are being set up for the local Coronation Week exhibition.

THE **Midsomer Norton A.S.** reports a successful year's work. The members exhibited 35 furnished aquaria at the last local Carnival and it is planned to put on an even bigger show this year. A cut has been made in the annual subscription to encourage membership.

JUNE 17-20 are the dates of **Edinburgh & E. of Scotland A.S.** show this year. Waverley Market, Edinburgh, is the venue.

THERE were nine classes in the tropical table show arranged by **Aylesbury A.A.** for their May 6 meeting. The judge was Mr. R. Rowe. July 5 is the date of the annual outing when **Asits** will be made to Wells and Glastonbury.

ENTRIES from societies are invited for the national open furnished aquaria classes at the **Nottingham A.S.** show on September 3-12. Entry forms are obtainable from Mr. W. J. Christian, 36 Bridlesmith Gate, Nottingham. The closing date is July 18. Main officials were re-elected at the A.G.M. of the

senior section. At the juniors' annual meeting Mr. J. Robey took over the post of treasurer and all other officers were re-elected. The club's annual outing to London Zoo is on June 7. A table show in the Albert Hall Institute has been arranged for June 30.

THE **Scottish A.S.** new secretary is Mr. A. Heron, Bellabouston Hotel, Paisley Road West, Glasgow, S.W.1, and the treasurer is Mr. R. Lochead.

FROM June 5-7 **North Derbyshire A. & P.A.** stages an exhibition at the Barrow Hill Hotel, Chesterfield. The club will be responsible for the aquaria section and other creatures will come from the private zoo of Mr. C. H. Keeling.

NEW address of **Crawley A.S.** secretary, Mr. J. H. Lusty, is 48 Gale's Drive, Three Bridges, Sussex.

PRESENT secretary of **Salisbury A.S.** is Mr. W. G. Palmer, 9 Elm Grove, Salisbury.

JUDGING the first open show of **Bath A.S.** (July 23-25) will be Mrs. W. Meadows and Mr. A. Boarder. A **WATER LIFE** diploma will be up for competition.

WINNERS of first prizes in the April 21 table show of **West Middlesex A.S.** were Messrs. C. Blagrove and A. Langridge. Speaker on the same evening was Mr. E. B. Lee.

ON July 21-25 the **Shelf A.S.** is holding its annual open show with a **WATER LIFE** diploma as a special prize.

A CORONATION show in Belfast, put on by **Ulster A.S.**, was open to the public from May 18-23.



At E. London's Dinner. Messrs. J. R. Bonsor (treasurer), B. Howe (chairman) and T. E. Butt (secretary) with Mesdames Bonsor, Howe and Butt. (D. J. Fraser)

A DOYEN among London Club Comes of Age man who liked nothing better than to potter around his fishhouse. Mr. A. Leutscher, B.Sc. (a newly-elected vice-president of the Association) made special mention of Mrs. Thaler, wife of the late Mr. Bert Thaler who was a tower of strength in the society's young days. Also present as a guest was Miss J. Smith-Johnstone, S.R.N., S.R.M., matron of St. Mary's and Balaam Street Hospitals, where the society has set up several furnished aquariums.

Mr. C. W. G. Creed (President) paid tribute to Mr. B. Howe (the chairman), who, although never an aquarist on a large scale, had worked extremely hard for the Association. He had been a member from the early years and, as an acknowledgement of his efforts, life membership had been bestowed on him. The chairman, replying, said that the society might be old but it was not senile, and in it was the merriness lacking in many other clubs. "The hobby is worth the best of our all", he concluded.

The successful evening was organised by Mr. B. Cross who acted as toastmaster and M.C., with his wife's three-piece band supplying the music. A fishy atmosphere was introduced with two pungent flatfish filets awarded as special prizes.

Club Notes and News—contd.

WE hear that **Blair A.S. (London)** is to be wound up. Whilst sorry to learn the news we are pleased to find that the society's assets are to be realised and the proceeds used to purchase a small trophy, to be known as the Blair A.S. Trophy. The intention is to present it to the National Aquarists' Society for permanent competition.

FUTURE programmes of newly-formed **Worthing A.S.** include a talk by Mr. Fuller on June 9, a discussion on June 23, a lecture by Mr. Cheal on July 14 and an auction on July 28. Secretary is Mr. V. R. N. Ryan, Angoia House, Angoia Road, Worthing, Sussex. Meetings are held in the Norfolk Hotel.

ANNUAL show of **Burton-on-Trent A.S.** will be staged from July 9-11 in the R.A.F. Association Clubroom, Market Hotel, High Street, Burton. Entrants will compete for a WATER LIFE diploma.

PROGRAMME of **W. Surrey P. & A.C.** for April and May has been varied, with Mr. J. Abraham speaking on "Tortoises and Terrapins," Mr. R. Fitzgerald showing filmstrips and speaking on "Water Plants," and members visiting Mr. Clegg at Haslemere Educational Museum on May 17. An open table show for tropical fish is planned for June 10 when Mr. K. D. Cook will adjudicate.

AT the May 7 A.G.M. of **Richmond and Twickenham A.S.** Mr. J. Hemens, 34 Queens Road, Richmond, Surrey, was appointed secretary. The President and show secretary were re-elected.

"**GENERAL** Aquarium Management" was the title of a talk given by Mr. R. M. Baylis at a recent meeting of **Reading A.S.** A quiz was the feature of another evening's programme.

LABYRINTHS, tropical egg-eaters, male Fighters and Barbs have been catered for in recent table shows arranged by **Riverside (Hammersmith) A.S.** A lecture has been heard from Mrs. Wood.

FOLLOWING the second A.G.M. of **Ashton-under-Lyne A.S.** the secretary is Mr. L. G. Taylor, 1 Stamford Road, Mossley,

Lanes. The chairman was re-elected. Meetings are held on the last Monday of each month and table shows and auctions are regular features.

MR. D. JENNEY, 750 Addison Road, Derby, is the new secretary of **Derwent A.C.** A prominent member of the Nottingham society spoke on "Aquascaping" at the April 25 meeting.

THE Lancaster, Morecambe A.S. put on a display at the Morecambe & Heysham Hobbies Exhibition, which ran from April 8-11. Mr. A. Boarder is visiting the club on June 27.

ATTRACTIONS at recent meetings of **Leicester A.S.** have been a talk by Mr. W. L. Mandeville and a Brains Trust session.

THIRD annual show of **Oldham A.S.** is arranged for September 23-26 in the Regent Street School, Regent Street, Oldham. Enquiries should be addressed to Mrs. V. Tripp, 187 King Street, Oldham.

AN aquarists' section has been formed in the **Redwing Club**. Meetings are held on the third Wednesday of each month. The secretary is Mr. D. J. Silience, c/o Messrs. Redwing Ltd., 340 Bensham Lane, Thornton Heath, Surrey.

MEETINGS of **Erith A.S.** are now held on the second and fourth Monday in each month at St. John's Hall, West Street, Erith. The secretary is Mr. R. J. Somerville, 4 Gloucester Road, Belvedere, Kent.

AN exhibition of tropical and coldwater fish, marine subjects and reptiles was held at Sheffield from April 8-11. It was organised by the **Sheffield A.S.**

THE London Transport (C.R.S.) Sports Association stages a one-day show on August 30 at Langley Park. In addition to classes for aquaria there are sections for cage birds, poultry, etc.

WINNER of the **Peterborough A.S.** home aquaria competition was Mr. A. J. Larkman. A programme of sound and colour films was enthusiastically received at the April meeting. In June, a Cambridge society member will speak on "Setting Up an Aquarium." In addition a table show and auction sale are planned.



Photograph

[Fax

H.M. The Queen Mother with H.R.H. Princess Margaret when they visited this year's Chelsea Show on May 19. Here they admire a flowering shrub in the garden of Messrs. Ralph Hancock & Sons. Several high-quality formal and informal water-gardens were on view.

MEMBERSHIP of the new **Invicta (Gillingham) Fish Breeders' Circle** is restricted to 13. The purpose of the group is the breeding and exhibiting of fish. The secretary is Mrs. B. M. Rushton, 240 Canterbury Street, Gillingham, Kent.

SEVERAL interesting outings have been arranged for members of **Mitcham A.C.** The new treasurer is Mr. L. Romer and the new secretary, Mr. K. H. Sykes, 57 Warwick Gardens, London Road, Thornton Heath, Surrey.

THE Smethwick A.S. has secured new headquarters in the town's High Street. Mr. Bowyer, a member of the Midland Association's lecture panel, addressed the first meeting in the new premises on the subject of "Tropical Fish."

Aquatic Traders' Association Discusses White Spot

AS reported briefly in our last issue, it has been decided by the Aquatic Traders Association to launch an "approved product" scheme. Officers elected at the A.G.M. were:—Capt. L. C. Betts, chairman; Mr. H. F. V. Wright, secretary; Mr. S. C. Jacobs, treasurer, with the following forming the Council: Manufacturers: Messrs. R. P. Shephard (Little Wizard Products), and T. C. Horeman (Windmill Products); Wholesalers: Messrs. J. North (J. North (London)) and R. A. Fairbairn (Fairbairns Aquaria); Retailers: Mrs. Riley (The Aquarium, Croydon) and Mr. C. Wright (Kingston Exotic Fisheries). The report of the secretary referred to the re-organisation of the affairs of the Association. The Association is offering a trophy for the best trade stand at the N.A.S. Show on June 11, 12 and 13.

Work During the Year

Capt. Betts reviewed the work of the past year. The council had decided to tighten up membership, had negotiated for exemption from, or a reduction of, purchase tax on aquarium goods and had arranged with the Railway Executive for the better handling and more expeditious delivery of fish and equipment. Disputes had

been settled, arrangements made for separate meetings of the three branches of the trade and a successful annual dinner organised.

The balance sheet prepared by the retiring treasurer, Mr. W. T. Jefferies, was accepted. A trade survey, based on a paper submitted by Mr. A. H. Boughton, led to a detailed discussion on White Spot. It was generally felt that the retailer in this respect had the matter entirely in his own hands. If he repeatedly received bad and diseased fish from a wholesaler he should go to another who had greater regard for his reputation than to supply other than good specimens. It was also pointed out that even with the greatest care from the best suppliers it was still possible to find fish, on arrival at some distant place, had developed White Spot. This, it was felt, was mainly due to considerable dropping of the water temperature. The matter is to be debated further at a meeting open to all members of the trade and not confined solely to A.T.A. members. This will take place on June 9.

It is interesting to note, Mr. Boughton suggested in his paper, that the biggest thing to help the trade would be for the A.T.A. to apply to the Board of Trade for a ban to be imposed on the importation of tropical fish from the Continent.

He went on to say that the trade would then be very largely dependent on the British breeder of fishes to get further supplies.

Some members of the A.T.A. have been averse to admitting to the Association part-time sellers of fishes, but Mr. Boughton says of them:—A trade should not be afraid of fresh competition, for the old-established dealer should, by his greater experience, be able to offer a better service, and on this better service he could meet such competition.

Usefulness of Part-time Traders

As to the part-time dealers, the whole-time professional should make use of them. A great many new aquarium keepers are brought into the hobby by these back-room boys, who, not being supported by manufacturers of equipment, and many of them working only evenings and week-ends, are unable to give the same service or offer the same range of equipment that can be offered by the established trader. My experience before the War was that the back-room boy gave me more customers than headaches. Many in this category are in the main fish breeders who sell their surplus to the public and dabble in one or two articles of equipment. They do far less harm than is imagined and by bringing their friends into the hobby they are increasing potential trade for the regular dealer.

