## November 1958 <br> Two shillings

## FISHKEEPING and Water Life



DWARF GOLDEN BARBS (Barbus gelias)

## PRINCIPAL CONTENTS

Nisser Barbs or Black Rubies

| White Cloud Mountain Minnows |
| :--- |
| Woung Goldfish | Outstandingly Colourful Annual Fishes

## Do you know



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I REMEMBER：—ーーーーーーーーーーーーー，
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628
Fishkecping，November 194

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sunk of of our $n+$ in. (the wilder tiv from facing the
iss the pirnure per square inch on the sole).



The Book of the Garden Pond george f. hervey \& Jack hems
This, the first all-embracing book on garden ponds, has been written
for the garden lover who wants to for the garden lover who wants to
know not only the technicalities of construction, but also how to plan the pond design, its fish and plants, so that they harmonise completely with their surroundings.
"Anyone with a query on any point connected with water gar-
dens would find the answers in its pages."-sunday times.
"Looks like becoming a standard work on the subject . . I I have no hesitation in recommending this
book." GARDEN NEws. book. - garden news.

Illustrated with photographs and line drawings by Eileen Hill. 16is. STANLEY PAUL

Fiahkeeping. November 198

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 WHITWELL \& SMYKALA tropical fish in these new, easy-to-carry Whitala containersMake sure your tropical fish come from Whitwell \& Whitala and are packed for you in the special new guarantee of quality because. Whitwell \& Smykala handle only the best in tropical fish and distribute to the most reliable pet shops.
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dealers in the WHITALA bag.


Yibliurping, November 1998

miniature furnished aquaria where exhibitor
are asked to bring their own $10 \times 8 \times 6$ in. tanks This style of miniature set-up aquarium
IN THE SWIM competition has proved very popular when
included in club programmes and, in January,
it makes its debut it makes is debut at Olympia so, if you art
short of plants but would like to try your skill in this most challenging field or show work.
make an entry in Class $A$. No heating will be provided for A 5 centric as no fishes s will te pe permitted in these diminutive
aquarian but top lighting will be available. aquaria but top lighting will be available. entry form if you are not on ow sctiodule and
and make your entry to the show iofitise list and make your entry to the show office by
December 1 .

- Home Shrimp pioneer. Alvin Scale, super-
 II wii Mr. Scale who first found that Brine Mhimips wore an excellent food for tropical hath ind he presented the results of his work
ind aplorations to the San Francisco Ansurium Society.
एक्य
- Obmpla show. As foreshadowed in our fry me issue the Aquaria Section committee Aquatic in January had to consider the next Whilst it was regretted that, for the next then brooder classes would have to be
tuition the committee made every effort to (using that the fish section would be as
will- lIve as possible for the general public and Iv fihkecping fraternity, The results of
ituir decisions are shown in the cliasifcation
 (liar from Barrow and All societies south of a
 minimize garden classes in recent yours. It titis. mana ceases for furnished aquaria ane
 Mahbroping. November 1958

- Artistry. The award cards of the relatively pew Federation of Scottish Aquarium n Sociction
are handsomely illustrated with Len Fulicrion
line.
 nature artist and during H.M. The Queen's recent visit to Fife she was presented by the
people of Newpor--n--1ay with two of Mr
Fefleton's Fullerton's nature study water colours for the
Prince of Wales and Princess Anne.




एक्जा
- Stody conference. On October 4 the sucesssul suarcond annual conicerenoes in the Lecturn Hall of London Zoo. A full report of the event appears clewhere in this ssue but
it should be lighlighted that Dr. E. N. Ghadiall, the respected Shefficld fishikeper
whose article appar regularly in Prsikn whose article appear regularly in Fsukumno,
was elocted President to succed Mr. R. G. Mealand.
This is
This is an honour not lightly dispensed by
the society but Dr. Ghadially is a worthy the society but Dr. Ghadially is a wo
recipient and successor to Bob Mealand.

अッन्य

- Worm-nide. In 1957 Julia Munday from Perth, Australia, was on a visit to this country
Her mother, an enthasiastic aquarist in Austrilia, Has anxious to have aquarist cure of Dwarf White (Grindal) Worms brought back to Australia and so Miss Munday got in touch
with Frank Arnold of London, E.7, during her visit bere. He provided her with a flourishing culture It was duly carried back to Australia and
thrivod for onme time, but it died out eventually and Mrs, Munday was faced with the problem
of replacing it. of replacing it. Frank Arnold's name to Dr.
She give Lintor, an Ansustralian medical man who
attended:a confercece in Bruscels in May of attended a conference in Brussels in May of
this year and then was duic in New York for


Mayerex, Town Clembun Town Hall priar to the Hemban AS. film convention. Left to right, DyPil
 634

AQUARIUM FISHES FROM CEYLON


No. 6. RODNEY JONKLAAS (Ceylon) continues his survey of the aquatic flora and fauna of the tropical rain-forests

A FEW species of water plants occur in Ain-forset regions in the lower raches This By yet , ihe commonest water plant of the Shaie strams are literally smothered with 4 ancife name is lacking. This dark-green plant tifice mistaken for alarge Cyptorarone sinde anis no hizome but reprotuces from long SWiphords crooker inflorsesence proves it to tran Mpangector
griy marginally and submerged in delightfal
 thailuan is confined to a fex junge swamp anumoger and, in the wides
WiW as high as eight inches. in thace treams comes romen terrestrial plants mail grises which haw intudd atong the tuiul spawning medium for the Barbs.

An average temperature for these streams
would be 75 dee. F. In the deep fores, shaded from the sum, the water is cooler, as low as 70 dcg.F, and in cultivated and deforested
land it rises to 80 deg.F. at times. The $p \mathrm{H}$ is land it rise to 80 dee.F, at times. The $p \mathrm{H}$ is
always on the alkalige side and in the region of
6.9 The water is esentially sof 6.9. The water is esentially sof.
The influence of mineral especi

The infuence or minerake, especially iron ore,
is offen notiedd in the higher, swamp streams where the finest bright red Cherry Barbs are
found

## Constant Conditions

Briefly, the jungle streams in the wet zone
seldom or never suffer from severe flooding. never expericnce total or partial dessication and
i cessation of water-llow, and are more or less cossuation of watcr-pow, and are more or
cosstant in their nature all the year round. As a result of the unchanging condition of
these streams and small rivers, there has boca tho estreimed breeding season, tore the fishos
no obser
found in them. The ideal conditions promote found in them. The fideal conditions promote
all-theycarround spawning in regular and alt-theyear-round spawning in reguar and
fairty limited cuantitics. There are no sudden fairiy limited quantitics. There are no sucden
appearances of largec numbers of fry, nor are

Whtivening. November 1958

There renting periods when only adults of any Every sinecie are apparent adalt and young forms at all times of the year The beautiful adult Niger, Barbs haunt the clear, fairly placid and sthidy edgoe of the
trrams- the fry frowing in the deses cootle of the syill shaliower marfies, dience rootiets Maby Raskrn romerfivis shoal in dense
cloudt well apart from the adults which observe Shirly strice tire smiterion. Gencrathy the thallower the water the smaller the sire of the fish and abundance of foy, with the wole
eacpption or Rabora varoriferis and Ratora dumiconiar whose fry viave dorp pooks. preferrins them to wey shallow sposs where preter-
carninorous and pudtary Combails and Chanass:
vhose yougs are borne in small numikers where they lurk clove to the surface and round about oubmeried bushes, doad tree stumps, etc., in deep pooke Cberry Barbs prefer very shailow
wampy diteher with fowing water for their If swampy ditche with flowing water for their If
as do the rare Dwarf Parndise Fish (Molouterte resteri),
Combt
 spedily sek refuge in sutmecred whoot they
prey on still smailer fry. Channas seldom bey on still smaiker fy. Chanas seldom in very thallow, leal- and root-filied dicties their fy bot the adolts like the marriins of
 nevor found in
Haby Garras, Loaches, Duntion muluhuricer and other Batrin secent to be rasonably imminuen
rom dinger and are found in expone he compiny of ceile larter fohes but pooter in bif showls- rather jut singly or in two
Varied Diet
The majority of fishes in the tropical rain-
fores locations are ominivorous: they pai incots, their larvx, alye, refuse from thuman Mabitation and even jungel frivit, Buman and the larger Babr are camplior, Xews and cal ryy, syown and anythinethat mone. Xewentolim
appars to be a strict fish-cater. Aefountia will surpritingly, . Pobble bread in streams clove to human habitation. The
Loocher and Garras are mainly alge caters and veectarian, but the Garras have an unplearam habit of secking food with their coarse sucker.
moutho from the fort and kin of huma-biecs. mouths from the fect and okin of human-beings
whe watue in the pooks. Some pools; are imponibie to wime or bathe in because of the
voracious and ticklidh Garras ! voracious und ticklish Garras !
One very outstanding feature of the fishes of
the tropleal rain-forests is their tenden,
fade and ctange colour with ary changer in in
 observed that all the brightet fichee fiat
toin as the water they inhabit is affient
nainfall which renders it temporarily fiut
 Freshly petted Nigest and Charry flaits fat vithin minites lo aquarariumer, unicust iny given idfat co
In order to get the bot out of thew has they must not only be provided with mumity condtions as close as possible to ins
described in their natural habitat but alow is. and quict, fferedom from unnecoun owity
station, netting. cocsuive siphonith station, netting, cacessive siphoning, eic.
It is then, and pertups it might take wet.
 Pralise that the collour rlates of tives finkirb
has seen are not coaggerations after all has contrary, they frequentions affter ally
thately to to
fish futice.

## READERS' HINTS AND TIPI

SUPPORTING A COVER GLASN
I HAVE found a very usefol methol sombetic sponge are aftached to the corvin


Of the frame by a short knerth of split rutiden Thit leaves just the right amount of an
sace between mame and corc, and the cannot becomene stock to the andes when inviably falls into the tank if the conct olay


Fishkeeping. November ters


OUTSTANDINGLY COLOURFUL ANNUAL FISHES
by D. B. Mcinerny
$0^{2}$
V comparativcly rare occaxiont there
arive in this country impors of "annual -tele their tile are spectes that in Nature (ine from the tropics where they live in pooty and uncumetet temporarily formed by heary, antinuous rainfall in the monsoon or wet
This water is naturally soft, but

W. Happe picicare af a mele C bellotio.

panes through an weid humus not unike peat. the pH:
During the rainy seavon the parchod rushes growth is so rapid that many of the pools and atreams are partially covend with dense Vepetation end of the rains the blaring sun reappears bur little of its powerfut light at
first penetrates the follage. thur these pook tint penctrates the foliage, thus thes pook
teman well shaded and comparatively cool
It is in thece water, often clear but tinged a It is in thee watern, often clear but tinued a
brownish colour, that such spocies as the Blue
 Chius rechovi, Plereldiar Prowsits, Cymilchius lives they attain maturity the lone dry seasong sts in , the tropical sui soon weorches the lush
egetation which dria and withers; the now bromud rushes and leaver wilt, and fall into
bo water. the water.
The pooks, slowly seeping away, are left
cuosed and evaporation beips to diminith
them more and more cach day. The maturing cyposed and evaporation heeps to diminith
them more and more cach day. The matring
fishes keep themselves in the lower strata of
'inhiceping. November 195s
cople wate tiose to the botoro of the pool


 Soon. Nature has run iss cource; the uyeing
 shorly he poois and tuerms no loneser cies Itamion patco is all war remains tho and dyy to be sorrhad by the sun, or rimied

## Dried-up Mod

In some of the more caposed sites, all that
can be seen of the pool is the dried up bed, the silty mud now so dried that it is imegularly cracked across by the heat of the sun ; but in
the evening the femperature falls, and in the earry moming, before sunrise, a dew keeps the mud slightily steamy and moister underneath
Here the cegs ice dormant , kept tat a humidity ust sufficient to maintain life, and at a temper-
aure that varics very lifte in the region of 74 deg F
Wcok
weacon may pass, but coentually the raing eges are moistence and develogment beyins when planted in warm, moist soil. As the nin pets heavicr, the old poois start to reffll culture medium for the multipplication of Infusoria, in much the sume way an aquarist
cultures infusoria, by sprinkling driod lettuce leaves on water.
This abundance of microseopical life is
thought to antack the cer covcrings and therchy thought to attuck the cege coverings and thereby
help the fry to cmerec from their prolonged meip the ing to cmerec from thecir protonged gratitude in a negative way, as they promptly
fall upon their reieacrs and devour them in great quantitios. fill up, the fry wet mote space Rotifers and Daphimio berin to appear and provide the little fishes with their nect size of lood So the fry grow and quickly reach
full maturity: now the wheel has turned full circle,
If we If we want to breed thece beautiful fishes in
aquaria we muat do our best to Imitate the conditions under which they have been nised full naturally: theusandsup on thousands of
yoars, so if you are lacky enough to te able yrans, so if you are locky enough to be able
to scuure a pair fed them generousty to bring
them into prime condition quickly.

For spawning they should be nearly fuil
grown, igorous and plump, and mant
ne pair may be then ore pair may be used per tank, but the main
can sometimes be antagonistic towarts can sometimes be antagonistic towarts thit
other. The broeding tannk should be shifer and our standard $24 \times 8 \times 8 \mathrm{im}$. one is itherl It should have a it in, , aver of wateloting
peat on the botiom and then be filled peat on the bottom and then be fillet Eint
aimwater that has stood on peat lons chonut nainuater that has stood on peat fonp chonip
to become a golden brown colour. This witi
vill by now be very soft and have a lil will by now be very sof and have a pilt
 the adult fith. The males are good driven met
thortly after they have been placed in the tortly after they have boen placed in
brecding tank spawning is likely to mart. With Aphasemion caralemum and Nortale Granchias rechor male and female come with
by side just above the peat and, quiving
 During itise enibrace one or pertups two (oy
are laid and fertilised. These fall into the pall re latd and fertilised. These fall into the pail
which is sliphtly stirred up as the parenti
aiver togeter quiver together. The procedure is reprated
many times in different parts of the tank, aind many times in diffcrent parts of the tank, ant
may continue for several day, after whith il
 With Conolebiar the method of breeding it
Highty different; here the males dispor thing selves in front of, and about the fomal) quivering their fins as they dart exciteity
qround Jec, Then suddenly boik fish, as thoul? I a given signat, dive for the peat at fler
totion of the tank, and if this vill completely disupucar into it for $a$ in. ding or two before cmerging again.
Each time a dive is made an cge or two in. hitid deep dow in the peat. Dive occur net rinute or so and spawning may continuen hit
roughly two hours bot, once the femalo hid tway in a cotner of the tank, the addults shouth

## Redocing the Water Depth

No matter which spocies you are breeding
leave the tanks well alone for the neer fer days. Then, with a siphon tube, very pemb and carcfully suck out the water, and siow
edfuce the water depth until the peat is ondy just woverd. an easy matter to maintain the termperatum in台 deg. Fo, but submersible hactere are, of it is better to stand the tank in a larse contains holding water, which can be keptat the required cmperature. Remove the cover glases we: hat evaporation may contimue, and do not
lorget to stick a piece of gummed paper on forpet to stick a piece of gummed puper on
toe side of the tank and on this write the date
of spawning or you will forget it later on.

Fishkeeping. November 199

In six weeks time prepare a good culture of
tehimotia in similar soft water at the same hemicrature and, when this is thenlly thicko
puer seme of the water on to the peat conwur some of the water on to the peat con-
ginins the cess, till the depth of waler is ditren to four inctios. Do this carefully on to a thanct, or you will stir up the peat into such a thad you will not be able to se through the
Hiniy tiquid. In a fow hour you thould see hegr two fry making jerky attempts to swim,
ont in a day or two you may find 20 or more mint in a day or two you may find 20 or more
ime wimming - if so you are doing quite well.

```
Wcaned en to Brine Strimpy
```

The babios, if well fed, grow fairly rapidy
aht if few days later, will take newly hatched thine Slarimp. After a further two weeks they Myile Cong will noed some Dwarf White

 DWring incubation be pationt, trying to
hilthout the cags a week too woon may cause hatch out the cges a week too woon may cause
Whe Jowloping embryo to dsintegrate, and
wiks of waiting will be wastod: on the other Whins of waiting will be wastod: on the other Inum the foregoing it will be seen that these
to they ute never available in great quantitios,
 Huring the brocder of a 8
All the spociss mentioned are very becautiful indead; thaposeniun carrulcum grows to a Nithotranchius rachor only attains 3 in, but

 Yenth of 2 in and, though the femalec are al
fulfish brown, the males are a delightul thirdtith yreen, Cin meripiomis is even smatler. What coloration of the mile is studdocd all
wain withtiny dots of electric blue, and reninds Han of a starry night in Decen

## of Separate Aquaria

Ait these speciec are worth a separate tank,
mind are thos not community fish. None is, by niture, long lived, but under aquarium con-
dinum some live a litle Coner than a year The exen so, they must be bred when mature for
Chir will not have very muchlonger to go. This futte them rarer sill and therefore more
tuluble, also one doo not offen gat the thanee of a recond attempt should failure I whikeeping. November 1958

## Fish Philately



Golden Leather-jacket
 Moumbique. Twenty-four different speciea
found in coastal waters of the Indiun Ocan were depicted in their naturnl colours, and cich Wecign incloded the scientific name of the finh.
The stamp illustrated shows the Golden Leather-jacket (Sicphannolepis nuratue), a brighi
yellowyellow member of the Family Alumeridid, and In the Leather-jackets, the body is lean and meagre, without normal scalcs. Such scate-
as are prickles. The fint dorsal tin is no more than a single spine elose to the eye, locked erect by a
tudimentary scond spine. Ventral fims are either atsent or reduodd to a mere spine.
There are no
species in Furop Thece are no species in Europpan waten
but they are numerous in temperate and
tropical wien. The tropical water, The Common File Fish ( $S$,
Aispidat), for intance iscommon on Americin hispida), for imstance is common on American
Alantic coosts Most pocic aro dull in colour, but $S$. spilsosomus has a brilliant scarikt
cindal fin cuudal fin.
The Lcather-jackets and Fill fisher are of no economic importance; indeed, many of bitter and offensive to tasto-
of defence againat predators.

JOHN WAKEFIELD
$\star \star \star \star \star \star \star \star \star \star \star \star \star \star$

## From My Experience

by R. W. ANDREWI
O sevcral occasions 1 have had the
rustrating experience of spending it con ding tank to spuwn a certain pair of fish when the fish have shown every nign of being
ripe to spawn but, after transer to the breding tank, their previous interst in each other has ment over a period of sweral dians the thit
have friled to to how uny tedimation to smawn Naturally the pair are then returned either to their previous lank-along with otber fahs of
the sme spocis-or put in a commonity tank and here the frustration has really been driven home, as the rentoved pair of fist have almos
immediately started to spawn. I do not know what aquarists in peneral call
that type of spawning ! However, I beliewe the definition of an "accidental spawning"" is when
fish unexpoctedly spawn under what might be termed usual fishkperping conditions, i.e. a tank with the normal se-upp of compost botiom with
rooted planks, a varving number of fish plun snails.
My last experience of an unusual spawning
which might come under the "accidental" which miphrery, took place whilst I was away on a
cate-mer catcowecks holiday during the summer and
concerns a pairof Blue Gouramies which shared concerms pair or Buc Gouramies which stared
a tank whith ome adult Nigger Barbs. At the
time of my holiday, mey tanks did not contain any young fish, no no provision was made fo tonk containing the Gouramics only, received
indirect natural daylight, a small light was kft tank containing the Gouram
indirect natural datigh, a s.
switched on over their tank.
On my return home 1 at once made an
inspection to see if the fish were all right, and great was my surprise on coming to the The female parent was hiding back in the plants, whilst the male was swimming out in the wero missing or dead. Despite the fact that all foeding had boen suspandod for two weekk, the young
antivity I I can only surmise that the parent fish
killed the Barts whose dead bodies created killed the Barbs, whose dead bodies created
uuficient infusorians to feed the fry. At one time 1 managed to obtain a gravid
female Red Swordtail of the old type glant
640
oblainable as to the type of male which hail was 41 in, in body lenght and was patarid. her own in a thickly-planted $24 \times 12 \times 1$ in
tank where, in the courso of time, he attianil her maximum size of a fult six iochec, Whily
doing so this femmale also producal wem siccocsive broods of young. Acount was math
when the fy were woys old of
brood from the female, the number being ilf whien the fry were two days old of inf
brood from the famale, the mumber being itit.
but none of her young. or resulting younptay but none of her young. or resulting youngtay
from ceontual matings of the oflspring. .at
attained the size of the original miletal patrent.
This sume femule Swordtail had one peculiut
behaviour trait : She invariably hid away the background plants should anyone stand in front of her tank. Only if the perron or pename
sat down would the female come or to ithe mornt and rosume normal activitio
As 1 possessed this fish at a time giant Swordtails had become a marity, iguarist friends offen brought along some al never failed to amuse me when I looked nepuat

a semicircle of silent quarists all intent un
uatching for the temperamental lady to mato ber entrance.
The reaso The reason for the female's docerital
behaviour might be found in the fact that my own everyday approach to and movenwait
around this Swordails tank were made sitily in a whecl-chair-my head and shouldin: frowing a much smailer shadow on the tant
han that of a person standing upright han that of a person standing uprigh
Fithkeeping, November 1998

## WHITE CLOUD MOUNTAIN MINNOWS

1 species at its most brilliant when immature
by PETER UTTON
HE White Cloud Mountain Minnow
(Tamictulyy ellonuber) is a mamber of the 1 Fumily Cypriniduc, or Carpy and Minnows.
 ithe community aguarium. holy and asis active yet pacacrable. Furthermore ItI not fussy abouilwater. Fonditions or milenough to go into iss mouth.
This fish derive its name from the White Chud Mountain in the Canton area of Chinn, wrima Its tolerancet to temperature change wiwhale vatiations in air temperature, together
-iil) the melting of snow and ice into the Musmain strams, cause
Theo factos alson jive a alue to its breating hithet for it is thoughit that the melting of the tow, heralding the approach of warmer
-cother, acts is a stimulus to breeding.
 mat become distressed at hight temperature Yeung Fish's Colouring
The White Cloud Mountain Minnow has
one recmblance to the Ncon Tetra fer it has tome reemblace to the Noon Tetra for it has
iven iridcocent stripe funning from the coe
finithe base of the tail and patches of red in the
 mein finh in which the coleor rrachs ine is
mitimum with maturity, the White Cloud is mumum with miturity, the White cloud is
wit it hest in the firs 9 or 10 woks of ith life
thine the brilliancy of its lateral stripe rivals Phim the brilliancy of its lateral stripe rivals
of the Neon Yerra.
Alionazards the brilliant green tends to fade, Alterwards the brilliant green tends to fade, hore is not very much colour distinction beWurn the seres but the female is much fuller My fint experiecse in breeding this litele fish 6is ascridental rather than intentionil. 1 kept
eruir in a small tank of $10 \mathrm{in}. \times 6 \mathrm{in} \times$.8 in.

[^0]
dimensions. The tank was well planted and relied entircly on its proximity to a radiator
for heating. Temperatures ringed from 50 des.F. to 80 deg . One day in carly Spring I noticed a tiny fry discovcred more and eventululy counted about 20. 1 removed several but ief some with the
parents. Of hece, xix were raised to maturity, the parents being present all the time.
I would not dvoate this as a good method. 1 would not drotate this as a good method
of broeding. in fact, according to nule, 1 should or brecding. in fact, according to ruik, 1 should
not have had any fry at all. The tank was too
small, it was ovecrin with snails and is was small, if was overrun with snails, and it was
rather diry. Nevertheless in this intance some young did dovelop. White Cloud Mountain Minnows lay non-
adhesive eges and spawning takes place over adhesive eges and spawning takes place over
sveral days Broding traps have been used
and also pebbles or eghss rots on the for of and also pobbles or glass rods on the floor of
the tank, in the manner of Danio brecding. the taink, in the manner of Danio brcoding.
As the newly-hatched fry hane on the sides of the tank, the parents must be removed to another aquarium to continue the e spawning.
This fith is not particularty cannibatistic, but like most specis it will pobble up aryithing
small and moving that it socs small and moving that it soes.
Probably the best methods involve the use of densely planted tanks prefcrably not smaller
than 18 in. 10 in. $\times 10$ in. These should be


FISH OF THE MONTH

## DWARF GOLDEN BARBS




 rother the difficuly of preventing the adult hish from cating their ceges. for which they show
an insatiable sopetice. Dwarf Golton Barbs grow to some $1 /$ in.
in the male and 11) in in the female. Matching in the male and 11 in. in the female. Matching
this small size is a relatively tiny mouth which means that quite fies foods are called for.
It is a ithy pueces but entirely paceful and It is a vhy spocies but entirely pleaceful and
wiil settle down in a community fors back is will settlo down in a community, Its back is
olive-brown, its underparts whitish and its
642
sides show up solden- or reddish-brown wifl
mersulat black markings. Fins have a fainity cllowish tinge. Orisa, Bennal and Atum
Coming from Orat
 ures. These can drop as low as 65 dey,
vithout the fishos showing distres but $75 \%$, or recompenced for rrecting. A propurimen
of liverood is helpful for getion the fin or liverood is helof ful for getuing the fixh intin brecting condition.
The Dwarf Golden Barb is a fish which in
never likely to atrect a grat deall of populain! never likely to attract a grat deal of populani,
due to its appectice for its onn ces and
 worth buying when it comes on to the mank
for its pifect disposition and lis slim boot
hape, which is a rclatively fare chanacterith in Barbe, wh.

Fishkeping. November 105


Variety in the
Newly-imported Fishes -by-
quantity of cookirg solt, or sea.alk may be
qadced to tue tank. and then the water may be男dually replued with rresth, since all these tioh will do xell in compleiel
loopg as the ctanger in sidulal. Thote quariset whin are sucamish about
tasing tank water may sut the water of the asting tank water may sut the water of the

 copectailly yusceptible to White Spot, if sub-
oct An atroctive fish, that is not seen as often Surfash Mesomismisho charcealem), I suppose it is not kept otatemevely because it is neificr
a coldwater fith nor at tropical fiob for an averase temeramere of co degi, is ise idoul. Its English name is fully docsiptiov for it Whaper than most of the Suntith. Ferintlo

Fepect to mee the traters' squintia particu: Tospical scason" Althount it is moro


 Wh bece nturundant.
Wiac faht, as opposed to those brod on the

 Nutline Down
 thin in claan, old water mesili they lawe

 mir not take kindly to tap-water a day ortmo New impors of etuarine fish, suchas Scats
 fir the water in which they are carricd home


fielikecping. Nowember 1958
to the widespread breoding of Angel Fish, the The fish can be bred in a largish tank and.
t 70 deg F., up to 300 egas may be laid in it deprestion in the graved where they are ganroded by the male, The female need not be ecmoved,
The cgis should hatch in about three days, and the fry may be fed Mikrourme as soon as they are freeswimming. This fish reuches
31 in. in length, so the larger the tank the Huin. in length, so the larger the lank tes
huppier it is. It a hardy pocies and has ber Inown to live for ten years in an aquarium:
Another fish that is not seen daily is the Another fish that is not seen daily is the
Green or Golden Rivulus, Rivalua monophtholimes It is a handsome South American species that
can reach throe inches in lengit. In the past it can reach throe inches in lengith. In the past it
has becn conlued with $R$, harrii. The wild fish㲘 spors and the "rivulus spot" is prosent The
Colden Rivulus is a cultivated Contincotal
varicty of the same flih.
This species can be bred in quite smal This species can be bred in quite smal
tanks which should connain a fair quantity of bushy plants, including such plants us Ricelid and Bladderwort to catch the cges. The adults
eat both the cyse and the fry, so should be eat both the cegt and the fry, so sho
remeved immintately after spunning The ove do not hatch as quickly as some, and
it may be a fortight before the young appoar. it may be a fortnight before the young appear
Rearing is easy provided that plenty of live rood is available. Temperatures of from 75 to
80 deg F. suit this speces, the adults of which 80 deg. F. suit this spocics, the adidith
are not to be trusted with malil fish.
Another fisc that turns up at infrequent
intervals is on the market onec more. This is Chtervastux p pumpratus, one of the Head-stander
Like most of the Characins it comes from South America. It reaches about three inches but it
 way of bright colour, but nevertheless it is
bandsome species with a black line alone the bandsome apeciec with a black line alone the
side, and pertly marked sales which, in
some lights, are reminiseent of the Checker Barb.
There are plenty of the ordinary livebeares
about and, included with trese, ape some Black Swordtaiks. Good Blacks are rarely seen these
days, and they are a difficult strain to keep healthy over several gencrations. If this can be achieved it is well worth-while, for there is
always a demand for good Black Swordtails. always a demand for zod Biack Suordank
The fault with many aquarists is that they are not ruthess enough when it comor to
weedimg out the imperiect specimens, and one
 There are more of the fascinatine Fresh-
water Pipefishe (Dorvifchys) on ofler and, water Pipetisios a conchyyn on of these, it
glancing trouyh a consignent of
was apparent that there is more than one was apparent that there is more than one
species included, though their habits and reguirements are similar. 644
imported wid fish and Kuhli Loach are a then
in point, for most big shipments contain wertal
 colours can ranese from dark brown to dih.
that almost give the appearance of twins that almost give the appcarance of heiny
Two of last year's plant importations have Two of last year's plant importations have
now boen propagated in sufficient numbers ti now been propagated in suficicnt num,
te withir the rach of the averag aquatis The within are bot reach members of the Genu Ruid
noxetore, maty of which are common in thit country,
The two
tanks and The two species in question are for tropiai
tanks and grow maceflly without perting ampant. Onc is offered as Potamarete
pecies and has a verical stem with trandirein species and has a verical sten with tramiunk
narrow leaves growing altermately from the base to the surfloce. The other, $P$. Muposires, :s
not very unilike our own curled pondweal luid not very unlike our own curled pondured fuit
unlike the latier, it "stays put". Roth thens mhike the tater, pove uscrut additions to the
prowing range of decorative aquarium plantit

## EARLY CARE OF <br> YOUNG GOLDFISH

T



 ank and replaced by water from the pme
which will contain microsconic livefood. Furher selections should take place approximately wockly intervals and, acowiting charactern, retained. At the end of a monith, when ollo of the fist stould be at loat halr-an nch long, they must be soriced by placing then
individually in a gass vesel. They may then be viewad from the side asel well as the top and
btose with fauls eliminated those with faults climinated.
In mixed spawnings there is Metallies and Nacreous fish to grow falit than the Matts and it is important to cowin
that one or more groups are not foing seloctid that one or more groups are not being selectid
at the expemse of another With euccessive slections the numbor if fish retained decreasel rapidy, oppcrially intien
case of the more highly deveppe varitition
Whatever the variety, the numbers in ead

Fishkeeping. November Iys
ank should bo refuced to about 50 at the
an month. Over the nex woek Ia month. Over the next weck the tempera homered gradually to that of tice pond and then The nhth should be transferred cutboors. is the pond rise to 70 deg.F. or more, Metallic hit whould be left outcoons but if temperatures He low the Metallics should be returned to th
tiung tanks after a fortnight in the pond. Indoons, young Metaliliss should be kept in luctuating temperatures rising up to 80 deg. F.
wit not more than 15 young fish (up to 11 in.
 Mutalle begins to change colour it should be
cturned to the pond. There will probably
hep pond to last the fish for the firt week but Whrat-germ atrificial food, oatmeal, fish, shivime. ind proprictary fosh foods ares satisfictictory but toy should be su
With havy fecding, poods are liable to if distress, they should be removed and the puat cleaned out and refilled. Do not remove ther from the side of the pond.
thit should never be put Into a pond which 4i) just been completely filled with tap water. thouil in quarter of the water should be raken. Invin unother pond. Blanketweed should Once fry have boen transferred to the pon hore is no need to continue sorting and cirimps were rigorous. One culling in July and
tiral one in Scptember thould te infficm finaf one in September should be sufficient. The linalselectionshould be donecareflily and
 1.idit ecping. November 1958
and 10 Mar finke should be, meximad

 poumble


 fodies holould ber rationed The aternutive.






 $\substack{\text { potadid } \\ \text { nosition }}$

 position. They should have rotated forward
at about sis Bubblecyes appear normal at hatching but, gradually, a palc, crescent-whaped rexion which is forming eventually bulgos con-
spicuously. In pood fish the creceent should spicuourly. In pood fish the crecent should
be vixible at two months and the bubble thould have bulped at four months
 ievale.


WATER GARDENS IN MINIATURE (2)
Use of rockwork and
selection of plant subjects
by 1 . stom
$\mathrm{W}^{\text {HeN ithe minitare e earden iv of informal in }}$ important to owe the sume kind of tuone lank amount of tare must be taken when the
 placod os as to remember natural outcropping
 paving of cementr, ean be uivel.
Small-uroving Appies
Ouite a lot of the plants wed in miniture
pardem are small prowing alpines. The

 siven added bsauty and imiteret by by be fucturion


 Cor the Junipen the moust
. Comensir, comprrsa, but there, are ate
 are four
Muples to be Conidered
Among the Maples two can be reoom.
 There are three willows which maike delight. ful sutiberst for the side of our liuke ponds and
 dumfoci tex now gherally refered to by the Japanese term, "Bomar" of shrubs and heithe
There are a number of small enouph to be clased as suitable minias



Mui oriutalic ruverlin compocha i, A. millowian pampocia, Rhadadmiton kamand


 suitible but here is a weverion of subicit which should do well for the patice whice: smpertioides, Ameria Jomperifotia, (i.me




 scotica Illy




Fithleeping. November 194

## SAFE METHOD OF ELIMINATING "VELVET"

 Whike to r read about rrecing fishes or

 if hudding that writiting of this type friviter This han catrme outbok, after all, diseses to oweck them and control them.
1 to not with to crate panic in the minds of
(1)
 15. knowledesable quarisi, in the hat four
 (ii) uressures as discribed in my provious Huper yate of fantari
In addition, a ramonable knowlodee of Aturium tactingues (uhich means no moro
 Wher heathy and mpos. Could anything Ka tupler The the tavaion bes through know Thate are only three commen diseaso which

 thyortance. thave alcedy writco about White Spot


Lirly Treatments
1 write about thix disene from considerable Whomal eppericnce. Same years aso it phaved A) that time, the netithyine treatment for wint copper sulphate as a cire The rewedy tuple une this antiquated and danecrous
tritheoping. Norember 1958
 Brictiow which 1 licorooply abher. eview a row reteran fockev Voint is is divecs

 fif nournce is that while the White Spor paratites orranism fuxt line on to to sirface, It is
 sutable chemicals placed in the water
Comparioon with White Spot
A fath can be cured in second by a singee sourse is not posuble in the case of the White
Spot parasite which is wokd out of W.ite spot parasite which it ocked out ot harms
velved and white Spot paraites have thee wiinming forns which are cesily datroyed
 may be cound natached to heceres, rockwork or Therte i howecter, onec important differnce
 Whate Sot eormentim out is ny notal parricice and cannot the for long without a fata 10 infert:
the Velvet parasite howner, an survice ad he vatue parasite houmer, can survive as it
 It follow, from this that while a tunk

 He the case or a tank infatied with Veliet. teps actively to destroy the parasties in the unother whins is in the case of whine spot
 Those who have not sect a amik infected
 syy that itisa ampxarature White Spot. Tho isuma spots an be seen on coloce cemmation of tho Fith. The spots howecer, are inininitely smalker
than those of White Spoot. Each represents

 But this is the adranced Xtare of infection and with erverienece, one thüde be infleto to port Thave never seen white Spoat on this ruty look or weckeold fry but vespot will atactick them. In that case only one or two very tiry spots can be sen. In fart it is imposaible to breed
 that velve wiil attack only a few suscotible
spocies. This is only parially correct at the
 Fighters, White Couid, Peari Danios and
Zobras top the list of suscertible firihes and atmost all menth are alos sumesptible. Live-
boures and Charcins were spposed to b immune but experience has teverat me that
they are not. Of cours 1 annot paik fo crey ingle species but thave cen this divease



## Tro Chenicals

Ithall comsider only two truatments- Thore Iong becen known to be effective apains Veliet.





 there is one furdamental snog with Bul
wonderiul cure for in a fow
bid find that the fistses ate infected once more
 toinfect the fixh You can asd another dron
or two of copper sulphate solution and you con cure the thith once more tut the dizese attempts the fitines will mope

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The lexic effect of coppo is as much tapin, is an unncliable methoc. As a curr it it tivis.
 effoctive but Imould not consider placien
Acriltarine Recommended
The safe and simple way of curing Veleter minute -it makes at kast a fortrichit buit an poitively rid the tank of this dizu.
 acrifivine Uhe commen strenght obainati is suitable, but 10 times the amount mentionit will be enedd for tresumen. to a 1 in 1 New oolution each mi. of solution will comatin 1 m ?
 requircd, At the beginning of the tratimein
acta 4 me of acifiuvine per pallon of tiaid wateer, i.e. 4 mi. of a $1: 1,000$ solutition.


 artincich ivet.
The dowel
The dote thave mentioned is not critial




 per anlon dove, The folowing day 1 mus. iv,






 hoole tratument a fortnight or throe uadl tater. The druat in quite harmios to fath and reatmontte danger tutaches to repating tia


Fishkeeping, November 190


NIGGER BARBS OR
BLACK RUBIES

Differing experiences described by Hendon club members
$T$ HE Nipger Rurb (Rartur migufaciciano.
 Nithowey kownit
Athough kown for se long many arcas of Wore the hast war and, in Holling, which i, Cup of it is sill known, was not peren until The would-be breeder may be happy to the would bex bicedat may be happy to
 thit lims In Nature the fiot is promitcurnd it Chlon





Widening until the rear half takes on an
orenall solour from dark ymy to black. The froat halk, and particularly around the no
will brieb
 hours and it is a wise procution to trmon
both fishes after a period The male will



 cuabe the ta tale of owourer. Whare this io
 In has ben ropired that hatching take
place afte 24 to 30 hour and certumly the young can be secn as smail dhas-like splinition
 Syimps affer five thys. Within one moont
colout will be seen on the fistes and thoy colourd wilt best see on the thates and they One or the most troquent cause of failurn


Small Tanles for Hreeding, says ./. Corvelli
REGARD the Nizer Rarbas he finat fish
 hime thibuct toyour
 Crimson Head" Any other Nigaser Barr eccupy your kill in an effort to produce the

Matitesping. November 1958 649


## Taro Tephmigues given by May Fisher

ONE of wi sexing a mak Niger Rarb
displaying his gorgeous courting colour
for the first time cin fail to be limpersed This marmificent colour and the very obliving adaptability of the fith to oquarium condition
help to add to its popularity with aquarits. help to adp oted wopdanity with aquarise be mere pocessful with regard to laptes samp
ings. This is posibly not the fault of the fish inges. This is possibly not the fault of the fisk
but of the equariss who may tend to cointinue
the the indiscriminate pairing of closely-selated The size of this fish is jur large enough to
make it a good community tank inmate. It does not semp to be se inclinect to fin nipping
as other Aarts and a vicioun Nigger Barb is the etecption to the rule.
apouithe nfurant Wiain 16 pan:
 so empatur mindok
 Alor bet fromech in in









 Nex cums: they mut hure plany of aif

 Aownard.
Apanf from the ultrs clran, bright tank hed
spawning the adults are never viry hapor



 camsulage
aquatium.

Nigeer Barbs are eaceptionally apilo and end to show themselves a good deal it the
tank. Where food is conerned they ate infinnicky eaters and are guite happy to be fod
on dried foods alone but. to kexp them in first-class condition, as with moort other fithen mouths diet is rocommended. They have shill mouths and Daphinia and Codopa are weath)
favoured as a staple fivelood, althowith thay will eat Glass-worme and White Wormit onity

 Theolt in equally brizht looking spocimens !


Fiblkeeping. November 1991


Y j deg when attempting to breed from them Fineding are with a poir and with a shoar Woth heve their advantages and I
miv method wili a pair of fish fins.
 Owing to the butting nature of the fanale a yuiming time 1 recommend an chaul thed a minant foncte witt rejerta a smatt mite as Having wlected the pair prepore a
$34 \times 12 \times 12$ in. tank and cower its botion With round, in in. diameter stonex Fill the
 (inal) to a depth of 8 in . Divide this tank if
 Merioperfilum, Cahombo or Limnophilia
Bita). Floating plants are also useful. Conditioning the Parents
The fith may now be introduced on separate ides of ithe partition and fed well and frecurantly
ina a rich, varied diet with as much liveood as posible, until the female looks really plump. This will take ebout a weoks. The diump.
thas may then be removed and spawning nill plas may then be removed and spauning wifl
fite ptice atmost at once. The pair should be whe ptoce almost at once. The par should be
pelobles. $\begin{aligned} & \text { spawning will normally occur in the morn- }\end{aligned}$
Spawning will normully occur in the morn-
ing, os the esparating ghas should be remowed
 Ank
ther spawning, the pair should be remowed
$\qquad$
and wo may eapoct the egss to hatch within
throe thys. About 24 houn affer scring the firoe foys, Aboul 24 hour after secing the slivers winh two dark oger one may introduce
a fy food or cultivat loflisorime and the a fy food or coltivated Infusoriam, and the
young wiftiake Mikroworms or orwly hatched
Brine Shrimpe affer four days. Larber foods Brine Shrimpe affer four days. Larger foods
may be offered as the fidh devilop in sire. may be offeted as the fith develop in seze.
To brect as a shoul is a simple matuer and is
permed if one nuires a lares output of
 young fish. Prepare a $36 \times 12 \times 12$ in, tank
as I five describd but do not divide witha
and glam Pluce forur or five fommes in the tank and
condition with pood food for a week. After condition with good food for a week: Aler
one week introduce two or three pood males,
This method eliminates rists of infertility and ensures more succest with cach spawning However, one should not under-atimpte the
tank spowe required with these fishes for the sucesaffil srowingoon and development of the
fiy, as the number may well reach many
fundreds.

## Artificial Spawning

Media tried
by Tom Atkinson

HE Nigger Bart mut be clased as ane
of the couniot of Harts to spwn and rar As I am one of the "living-foom" aquarists athbreeding has to be on a retriciced sale
with no aertors, no Infuseria, and with such Thines as Mikro-sorms and Dwarf White Worms discreetly out of sight in a "built-in"
ype of aquarlum staod. Adutt Ni pacr Alarts were kept in a throc foot community apuarium
with two smaller tanks fitted underneath for with wo smaller tanks fitted underneath for
broding and growing-on new fisher. troeding and growing on new bisec
The Ninger Batro used for breving were
actuaily purchased as near to adutt fish as actually porchued as near to atuit tish as
posible for "fow nog on as they wert int chded
for entries it furnithed aquarium thows. However after secing them ppanming in a ing attempt was the obrious neat step. the mpethods I adopted in broefing were
mostly based on the numerous breding hints nosify based on the numerous breoding hints
and ups recommended by various lecturens.
The

 $22 \times 12 \times 10$ int.

Apice of Lin. thick Perpece 2 in . long and
in. hotiom of the tank willt te cond wecterd in
the two front corners thas forming a curved Wathod $f$ in , gravel was then put into the
 where, durisg the fishec ztowing oon state
 outide adustable thermostat were instalied
and the top tight reduecd to a $15-\mathrm{wat}$
lamp.


 in comh otber and fo their now wurroundien

 When checkec next morring the tompentius
was found to bo 70 dogres. Heat and lighi mas round to bo 70 degress. Heat and lipit
were azain swioched on and the thermosit



 depasited in quantitios of from twe
a time, at imernals of $1-3$ minate.

ing matia were tried logesther; ,ooc was coconut fibre and the other, pate uruen
nylon wool. Both the nylon and coconut tibre tere statilued by biving and the wool was dump of approximately 6 in. length The licermostat was adjusted to kexp the sme
 was aloournd to stand for about 24 hourg tank $\hat{A}$ pair of filtoc wer sleseded the male for sood dhape and obrious tipeness for spawn-
 Worms variours rooprictar D buphnind fooks and
 netcod and transferred dirnet to the breeding
tank during aurly ercaing. The thermostat wis immetiately $\pi=$ adjusised to to rise tie 652
 were last from sight. At his stape phote grapts were takercor the spaming buir nothime changing the 15 wat lamp to a 100 wall cw the use of fachligh for the poologrophi to cauning continuod until the male bepp was about tuo hoor after the equathin commenced, by which ume both pareats wow
 at internala and cernian cess pinpointed fie
position. After 24 hours it semed as thou position. After 24 hours it sememsd as thouyd
some gege were disupparine but, alfer If hours, tiny fiy wer seen hangine amone we
nylon wool, lliredike in appanamex and wilh two large, dark eyes.
In 48 hours hundreds of fry could be countel Fishkeeping. November 195II
and at this sase feeding was started with parents had not discriminated between the (viot spawning modia, the fry thowed a dirtinc
 introdicod as an additionat Iood
Anter the Fourth dhy Brine Shrimps were foe
 thoot to the diet and fincly sieved wheat-gem thad food. The duss hike food was blown on the the lice hale drilkod in the cap which enabiod $m$,
10 thuting and anchormo to thastric focening ring antre of the tunk. Heayy fecsilis at this time



PICK OF THE PETS
No. 7. THE CLAWED FBOG
 and replaced with catefully added ncw compost
Siowity too, this area was filed to full gavel When three weks old the fry were in various
iures und atout 50 of the minlec once disarded The payming media were remoroct
 The rear hulf of the tank was set with Cyplor-
corme plantst to give a more pleasiog appar$\stackrel{\text { ance }}{\text { Wien }}$ Wben six werk old the fry wern obviousty
recogrizable as Nigerr Batbs, and a further ucoding out was neare to larie about 60 tish. These were split imfor two equal groupx and
one buach was ransfered to anobther similityly-

 tried preparations
$T$ HROUGHOUT practially the whole of in witable places, a proup of amplibians under the name of Xcompast: The bert known
 Cris means "smootu". Slippery as an oet. this
 Together with the cien stranger Surinam veloge lo the most primitivivgroup of Amplitition
ailed the Aplosa. They have no tonguse and aled the Athosam They have no tongues and


JAVA MOSS FOR DECORATION AND AS A SPAWNING MEDIUM

A useful aquatic plant which has yet to be seen in Britain
by G. BENL ('Isis,' Munich)
$A^{\text {BOUT } 25 \text { y cars ago a mall aquatic moss }}$ col of the University of Vienna, amonse al
 puted it by means of the leafy branches of the Itardy Species
In the yars that foliowed the moss proved (0) harty, making it an execileost spawning of 50 to $86 \mathrm{dc} . \mathrm{F}$. and proms under natural
of artiocial lighting. in a well illuminated or
 When in is mudy the moss can be wabee
not eren softy pessed out like spope. Th
-uter of the tank containing it should be more erless thagrant; too much movement, caused by uration of filtration, should be axoided. The
vant may be kept freeflouting neir the plint may be kept freedouting neir the
nequrium base (it Is not a surface plant like Ricria flutiame) or fixed to a stone (preferably
(runite) when rhizoids will grow out and attach
inc moss to tits subbistritum.
in recent years Java Moss has bocome well In mecent ycars Java Moss has bocome well
town mong Europan aquarists.- Now it is Wis community small broceing taquaria but

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Mecmblance to Willow-moes
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 vilgminiou, It can, howcer, be cultivatol undrially, thus proving it to be an amphibiat hive ato bopn observed on whemerged plants Wit it is unertain whether the spores are able
bo pominate when fully submerged.

Inthiseping. November 1988



For many yars all attempts to identify the Ocs scientifcally failat It was only in in detcrmining the species. Dr. 1. Poclt many) had recognised the Genus some monthe

## Sientific Na

Thus lava Mous has now pot its botanical Iis native country is the Indian Arctiperlite and Malicca.
nerbaencts





THE Perch is a member of the Family fixed or entangled on some reed sem so that,
 Is equipped with two separate doncoly fing is The first donsal is a spiny fin while the is of soft rays supporied by two tpinescond Twe
imposing spiny dorsal fin brive when the fisih is in danger, and when attacking its proy. It is advisable, therefore, to use a net
when handling a Pocet for this sharp, prickly fin can be painfol.
In general colouring the Perch is oliv-green
along the back, being darker in the dorsal repion, and shading to gorder-yellow on the tides and to white or silver on the underside.
The spiny donal fin has a black spot at iss The spiny donal fin has a black spot at its
etromity, while the fins on the louer part of When in eood con with red.
the bod, are tine
Wen
verical bars on its sidios are very distinctive and range in number from five to eight. Without doubt, the Perch is one of the hand-
womest of our native fretiwater fishes In their natural habitat Perch have no need for they are already ercarious, though awhing For they are elready gregarious, though a shoal
may be joined by a few large specimens which are normally solitary.

## Spauning Sites

Perch spawn during the Spring when, from shallow water where the bottom is of gravel for preference bot contains plenty of aquatic plants and reeds
The egss, covered in jelly, are laid in a long
string or tiboon, the end of which becomes

## Sorvival of the Eges

In spite of the mary dangers, howerr.
countless eggs survive and these hatch out about two to throe weeks, depending upon the about two tio throe wecks depencing upon the
temperature of the water. The Perch pry sink
to the botiom where they remain for abou to the bottom where they remain for about
four weeks BEing of carnivorous habit the fry feed on
liveford consisting of insed tare livefood consisting of insed larvi, worm
and the smaller crustaceins, etc. When the and the emallec crustacceins, etc, When then
grow large enough to be capabie of doing wo the young Pecrch purue and take small fish.
Nomally the fry develop rapidly and in on Normaly the fry develop rapidly and in ons
year they attain a lenthth of three to four inches
When they Year they attain a length of three to four inches There are numecous hkees and ponds in this
country which are warmine with tiny Perch country which are swarming with tien Perech
Imariably these ffsh are of sunted provith
This is This is enecrally cursed by lack of food
Interbreeding is, of course, another reason Diterbrecing is, of coursc, another reason.
During the war millions of tiny Perch averaging about I of, each, were regutaty
traped on Lake Windermere. Those fish wert trapped on lake Windermere. Those fish wert
canned in oil and sold as "Perchines".

Fishkeeping. November 1951

The aquarist who wishes to keep a fow Perch,
way go to his local lake or gravel pit and catch then quite easily. However, it may be prefered toa approach in angling friend for be will often hook smail Perch which are usually common in
wory kind of water, such as canals, lakes, recrvoins, gravel pits, and slow-dowing rives, Althought there are many ponds full of Perch highing a touple of ounces cach thome watce
hiold two heavieat rod-caught Pocrh weighed over 6 lo.
-lich, incidentally, is a fecord for the Britih
 suffolk Stour in January, 1990, This hutec
Kerch was weighed on a spring balance which Werth was weighed on a spring balance which
was subsequently tosted for accuracy and
 record purposer the wecight was given as yust
cher 516 . 15 o. No mater how well kept and led aquarium Perch never reach that weight.


## Paralise Fid







 Hultying Intleence
 Senethuis, Btack Mollie Gocuppies and the

ful aquarium fish, they are bet kept in a tank Othenselves because of their predalory nature.
Therefore, whether they are kept in an aquarium or garden pond, they need a good
upply of animal food. This may consist of upply of animal food. Mis may consist of
wioms, maggots, shredded meat, and any live ish small enough to be swallowed.
Yarge Pieces of Earthworm
When feeding with Earthworms small ones an be cur in haf, It is not usually essential to
thred Earthworms for Perch, for they much prefer them large nou te to be wrigeling. Large Perch will feed solely on Minnous and
Stickleback. No ohter fist smaller than the Perch shoust be kept in the seme aquarium. To display the Perch to best advantage it is
as well to fumish the aquarium with clumps of as well to fuimish the aquarium with clumps of
Vollisueria and other tall-growing plants with timilar foliage; this whl acentrate
brilliant protective coloration admirably.

## Oweries are answered free of charge by experts.  







 beiog fribhicned to come out into the open
 whe copanaic tank for the time being and see if Root Pruining
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treatment. In fact the plants will benelit by this




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## Lictood Avalable

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Fishkeeping. November 195

Aquaria Section at the 1959 National Exhibition Increased Prize Money for this January 8-10 Fisture

 ${ }^{3}$ Suntan framprisis.

## Classification

Cum A1. Cun Thoricit Funsump






 prize money

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 Mr Conicel, whowe colout photompthat of

ation, to be held in the New Ans Lecturc Thetrey



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## Scottish Commentary by K. A. M. Robertson

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by W. L. Mandeville
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Food played an important part in the frateman
visit or the Midand Aquarium \& Fool Sociery tial



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Fishieeping. November 195

South-West Viewpoint by H. C. B. Thomas













## Leeds Annual Shov


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Third Annual Film Convention





Thblkeeping. November 1958







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Trophy Winners at Three Counties Ber how wrom coud counties

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## Fifth International Guppy Show in Berlin










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## Goldfist Society＇s Convention










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Fithkeeping．November 198

Study Society＇s Annual Conference






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Walthamstow Takes Furnished Aquaria Honours












## No Notes 2 \＆News








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Fishkeeping．November 1988

Show Dates
















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