

43.

The AQUARIUM

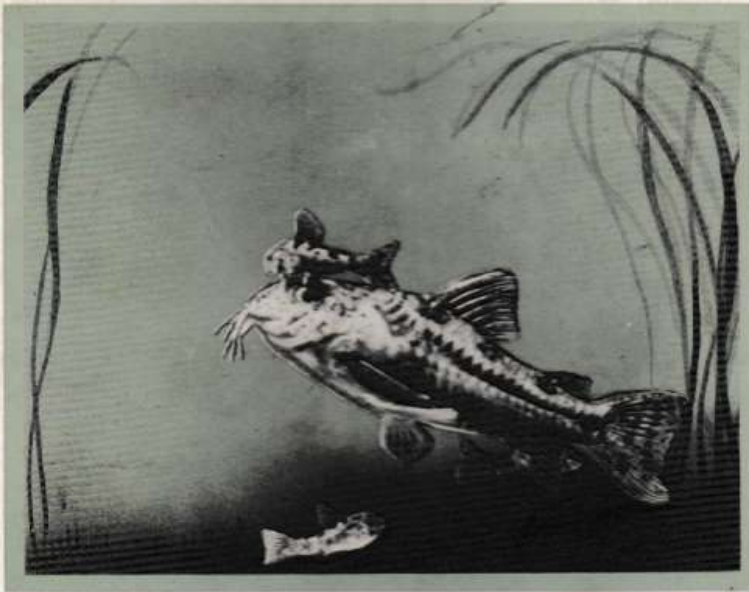


Photo W. T. L.

CORYDORAS PALEATUS
with some of her babies

August, 1939

Vol. VIII No. 4

Copyright, 1939, Innes Publishing Co.

Price, 20c

THE AQUARIUM

. . . *Editors* . . .

WILLIAM T. INNES F. H. STOYE

GEORGE S. MYERS

Published Monthly by INNES PUBLISHING CO., Philadelphia, Pa.
\$2.00 per year, in United States and Canada, 20c per copy. Foreign, \$2.50
All remittances to be payable in U. S. funds

Entered as second-class matter, May 27, 1932, at the post
office at Philadelphia, Pa., under Act of March 3, 1879.

Vol. VIII

AUGUST, 1939

No. 4

Contents

	PAGE
Aquarist's Calendar	54
Spawning <i>Corydoras aeneus</i> , by BRADFORD E. ADAMS	55
Fishes that are "Poorly"	57
Betta Raises Strange Brood, by ORVILLE K. EVANS	58
Stopping Slow Leaks	58
How and Where to Look for Mosquito Larvae	59
Fins Grow to Meet Emergency, by R. S. COLLEY	60
Tree Frogs Eat Fish, by O. C. BELDT	60
An Exporter Tells His Troubles, by ALEXANDRE STEINHOFER	61
In Praise of Argyrol	62
Chopper Simplifies Task of Mincing Worms	63
The Aquarium Beautiful	64
Editor's Letter	65
Gleanings, by F. H. STOYE	66
Correspondence	68
Is the Liberty Mollie Guilty?	70
Blindness in Turtles, by O. C. BELDT	70

THE AQUARIST'S CALENDAR



THE coined words "Aquascape" and "tankscape" have come to have a real meaning among the fraternity of aquarists. This is largely because of deepening interest in "the aquarium beautiful." A smartly set-up and planted tank is a thing of charm, attractive to guests and even to members of a household who have no interest in fishes. The editor is credited with the saying "An aquarium without plants is like a bird without feathers," and a great many people agree with him.

For plants to show to their best effect they should have natural settings of scene. Good use of sand and pebbles is taken for granted. The fine art of natural aquarium set-up is more dependent on the clever selection and use of large and small weatherworn or stream-washed rocks of good color. The thought for this month's Calendar is to be on the lookout for suitable pieces while on automobile trips or vacations. Brought home and stored for the fall setting-up they will be greatly appreciated and will give lasting pleasure to all.

* * *

When we were boys, we used to be warned against swimming in freshwater streams in the "dog days" of August. We never knew just what the mysterious consequences were supposed to be. We have since heard the expression that ponds "purge" themselves in August. Superstition is sometimes re-

lated to fact. These various ideas are no doubt strung together on a thread of truth. The two facts of practical interest to aquarists and pond-keepers are that water, if undisturbed, has a marked tendency to clear in the latter part of summer, also that there is no reason why water from a pond, otherwise good, should not be taken for aquarium use at this time of year.

For the same reasons, it will be found that pond Infusoria for the feeding of newly hatched fishes are rather difficult to gather in quantity just now. The artificial propagation of these forms does not, however, present any added difficulties during the month of August.

* * *

From now until fall is the time to concentrate attention on selected specimens of young. Pick the best. Give them the attention, the room and the choice food. Theirs should be the mosquito larvae, the Daphnia and the chopped earthworms, alternated with the best of prepared foods. This care will produce the finest breeders and show specimens that will be a lasting satisfaction to the aquarist.

For those who have raised large numbers of fishes over the summer, it is not too early to plan what is to be done with a large stock. The wise ones will build or buy extra tanks now, so as not to be compelled to throw great quantities of stock on the market in the fall months at slaughter prices.



SPAWNING *CORYDORAS AENEUS*

BY *Bradford E. Adams*

• *Photographs
by the Author*

I HAVE always wanted to breed a pair of catfish, but, for some reason or another, I have been under the impression one had to be some sort of a magician to accomplish this feat. He would have to have that one pair in a hundred that would mate together, and provide them with certain accepted perfect conditions. However, this belief was dispelled when I looked in one of my tanks and discovered, to my joy and amazement, about a hundred large white eggs adhering to all four sides of the tank. These eggs soon hatched out, and now, at the age of ten weeks, I have about fifty fish ranging in size from 1¼" to 1¾".

Knowing that aquarists would be interested in the details of the spawning of these odd, but interesting fish, I decided to transfer the parents to another tank and await another spawning, witnessing the same if possible. The tank that these fish (two males and one female, each about 2½" in length) were placed in was 30" x 12" x 12", held about twenty gallons of old, clear, aerated water, and was filled to a depth of about 9". There was about an inch of sand on the bottom, very little mulm covering the sand, and not more than a dozen plants. They consisted of a few sagittaria, vallisneria, bacopa, and one spatterdock. The location was in a southeastern exposure where the tank received about four hours of sun a day. The temperature of the water varied between 75 and 80 degrees, and the pH was about 7.2. The fish were not separated from each other and were conditioned on nothing but a mixture of farina (two parts), dried shrimp (one part) and one egg

cooked up in the form of a stiff mash.

After waiting several weeks, during which time the female was apparently filled with spawn, my patience was bountifully rewarded, when I discovered several large white eggs on the front glass of the tank. I knew what this



Corydoras aeneus spawning on the front glass.

meant and decided to sit down in front of the tank and await further developments. I didn't have to wait very long, for before many minutes had passed all three fish became very restless and started cleaning the front glass in a very rapid backward and forward motion. After continuing this for several minutes all three retired to the bottom of the tank. In about five minutes the female swam up to one of the males, in a manner similar to the way a male swims after a female in the

ordinary spawning procedure of egg layers. The male instead of swimming away, remained still and the female pushed against the side of his body at an angle of 45 degrees with her mouth near the vent. Upon closer examination I noticed several eggs between her ventral fins, which did not come in contact with the male's vent at any time. The two fish remained in this position quivering slightly for several



The eggs, slightly enlarged

seconds and then the male swam off leaving the female motionless upon the bottom of the tank. She remained this way for about a half a minute and then started to swim along the bottom toward the front glass where there were some eggs laid previously. Upon reaching the front she turned sharply upward, and then pushing and sliding the whole underneath part of her body along the glass, spreading her ventral fins causing the eggs she had been previously holding to adhere to the glass. After this she swam off leaving the eggs and retired to the bottom. The

eggs were white and quite large, being about $\frac{1}{16}$ of an inch in diameter. None of the males ventured near the eggs, so that the only way they could have been fertilized was by the female placing the spermatic fluid on the glass with her mouth, which she had obtained from the male several moments earlier. This procedure was repeated at various intervals until dark, varying from a few minutes to an hour, and anywhere from four to sixteen eggs were laid each time. Most of the eggs were laid on the front glass, although there were others on the other three sides and a leaf of spatterdock. The only reason I can account for this is the fact that the front glass was the cleanest and the fish evidently prefer a clean surface on which to lay the eggs. None of the eggs were laid nearer than 2" from the bottom or 1" from the top. Several times I noticed the males trying to eat the eggs, but they were glued so firmly to the glass it was possible for them to get but a very few. After I was positive the spawning was completed I removed all three adult fish.

The next day I counted 380 eggs in the spawning and already the tiny embryo had started to develop.

The second day the eggs had started to hatch and by night practically all had hatched that were going to. It was interesting to watch the tiny tails sticking out of the eggs wiggling while the fish were trying to escape. Every once in a while one would hatch and the fish drop to the bottom. I'd say that about one-half were fertile.

The appearance of the tiny scavengers resembles that of the pollywog, a tiny white ball about $\frac{1}{32}$ of an inch in diameter, with a tail attached that measures about $\frac{1}{8}$ of an inch in length. Any movement through the water is accomplished by the wiggling of this tail.

Young Corydoras, after they are hatched, do not adhere to the sides of the tank like the young of most egg layers, but instead they remain hidden in the mulm on the bottom.

It was fully a week after the spawning before all of the babies were visible, since they were hidden more or less in whatever mulm there was on the bottom of the tank. They had now doubled in size and their tiny pectoral fins were plainly visible; also their bodies were slowly beginning to show some sort of a shape. Up until this time their only nourishment was obtained from the microscopic life that was present in the mulm. After a week I started feeding them very fine powdered food made up in the form of a mash, also oatmeal and farina mash.

Ten days after they were born one could easily tell they were of the Corydoras family, although at this age they appeared to look more like the Paleatus than the Aeneus since they were a mottled brown rather than a bluish green. Their true color didn't develop until they were three weeks old, at which age they were about $\frac{1}{2}$ " in length. When they reached 1" in length, which was at five weeks, their labyrinth organs started to develop, after which time they obtained some of their air from the surface.

Out of this spawning of about one hundred and fifty eggs that hatched I have about one hundred lively, healthy fish that are six weeks old and range in size from $\frac{3}{4}$ of an inch to $1\frac{3}{4}$ " in length.

Not "Rubbernecks"

While Paradise Fish, Bettas and eels can bend their spines amazingly, no fish has the power of turning its head in the same sense that many other vertebrates do.

Fishes That Are "Poorly"

Many aquarists (and they are not always beginners) want to know why it is that some of their fishes become poorly and emaciated. The belly caves in and the backbone arches up. Such cases are easily recognized. The causes are not obscure, but it is seldom that the condition can be remedied. Here indeed prevention is better than cure.

A hollow belly in a fish may be caused by any one of several things, the same as when a man becomes bent and emaciated. Malnutrition, too little or wrong food, bad air or water, internal parasites or organic faults of the system may each or all contribute to the result. As a rule when a fish shows this well-known symptom it is either old and approaching the natural end of its life, or, what is more likely, it has long been subjected to overcrowding and too little food. The fact that perhaps only one or two fishes out of a collection are affected in this way simply means that they are the weaker ones and break down first. Others are likely to follow unless some change is made. Use less fish or more space. Feed oftener; at least twice a day if the water temperature is seventy-two or higher. *Mollinias* especially should be fed several times a day, preferably on small-sized food. Give more live food or substitutes for it, such as scraped and minced raw fish, finely chopped earthworms, crab meat, oyster, clam, etc. Do not forget boiled spinach, especially for *Mollinias*.

Most cases of "hollow belly" occur in aquariums that are horribly overcrowded, such as those where Guppies have been allowed to multiply endlessly without any of them being removed.

The beginner expects the veteran to tell him how to bring such a fish back to health, but there is no answer, except the laconic one, "Too late."

Betta Raises a Strange Brood

By ORVILLE K. EVANS
Oakland, Calif.

I have often wondered what goes on in the head of a hen when duck eggs have been substituted for her own, and she sees the weird results of the hatching. A good Betta of mine has had a similar experience, only it is all the more remarkable that he did not eat the little changelings.

There had been a miscellaneous collection of fishes in a 10-gallon tank, including a pair of *Pachypanchax playfairii*. I removed them all in order to use the tank for breeding a pair of red Bettas, for the water was old and there was a good layer of settlings on the bottom (evidently containing eggs).

In due course of time the Bettas spawned and their eggs very likely hatched. I always take a sporting chance on leaving the parents and young together as long as possible. All seemed to be going well, but the babies appeared to be growing awfully fast, and they looked queer. It was not very long before I discovered that I had a spawning of *playfairii* and no Bettas.

It is no uncommon thing for spawns of bubble-nest builders to completely disappear without help of other fishes, but I suspect their end was hastened with the help of the larger *playfairii* youngsters. The surprising thing is that the male Betta seemed not to detect the difference. The fact that I kept him well fed with live food may have caused him to spare them, but in many instances this ruse fails, even when he is tending his legitimate children.

The Fly Swatter

Flies flourish in summer, creating an added opportunity for fresh food for fishes. When freshly swatted they are fine for any fishes large enough to swallow them.

Stopping Slow Leaks

Fortunately, cracked glass in an aquarium seldom produces a serious leak. It is usually a slow drip.

Of course leaks are always discovered at the most inopportune times. One thing that can be done to postpone the day for a repair is to cover the outside of the leak with one end of a long ribbon of paper leading to a receptacle on the floor. This acts as a wick, carrying the water to a point where it will do no damage. Sometimes the leak repairs itself in a few days while using this method of postponing the evil hour. A strip of tissue paper off a roll makes an ideal wick.

In times past we have all seen ugly repairs to cracked aquarium glass in which a line of putty is placed over the fracture. This is not necessary. If the tank is thoroughly dried and laid on the cracked side, a thin line of clear Duco or high-grade spar varnish may be run over and into the crack. When well dried this makes an excellent repair. A little moving pressure in the neighborhood of the crack while the varnish is fresh tends to work it into the fracture, which is very desirable. Two coats may be needed. Wipe away surplus.

As far as this method of repair is concerned, it applies as well to a leaky line of cement as to cracked glass. First having the ailing spot bone dry before applying the repair medium is most important. Give it plenty of time after it seems dry.

For many years we have recommended the use of muddy water for stopping slow leaks where the glass is cemented. This is particularly effective with a new aquarium or with an old one that leaks after being moved. Make the water plenty muddy and stir occasionally. It may take from a day to a week to stop the last drop.

How and Where to Look for Mosquito Larvae

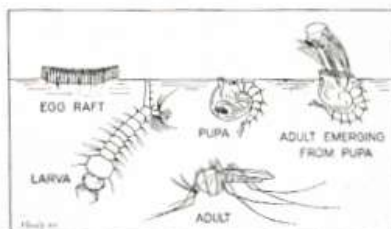
Writers on aquarium topics make frequent references to mosquito larvae as fishfood, but the fact remains that many persons, even aquarists, do not know what the things look like, a great disadvantage in setting out to collect them. Some people (not as many as in former years) are familiar with rain-barrel-wrigglers, but do not know that they are potential mosquitoes. The object of this little article is to enlighten that small proportion of aquarists who would like to collect some of this fine fish food, but who do not know where to look, nor what to look for.

Mosquitoes always deposit their eggs on still water. Contrary to some erroneous belief, they never breed in grass, shrubbery or vines, although adult mosquitoes often hide there. Biting is done only by the female. When well fed she fills with eggs, which are cleverly deposited in the form of a slightly up-curved floating raft. It looks dark, like a large flake of soot. These rafts themselves are very good to collect if one has young fishes that would be interested in eating newly-hatched larvae about 1/16" long. These rafts may be placed in the tank with the fishes. Every egg hatches.

The accompanying enlarged illustration gives an idea of the shape of the larvae. They average about 1/4" long, and are mostly dark gray or brown. A few are bright green. Breathing through a tube at the surface of the water, they congregate in masses, ready to wriggle to the bottom when alarmed. For this reason they must be approached slowly. A quick sweep with a long-handled net gets most of them.

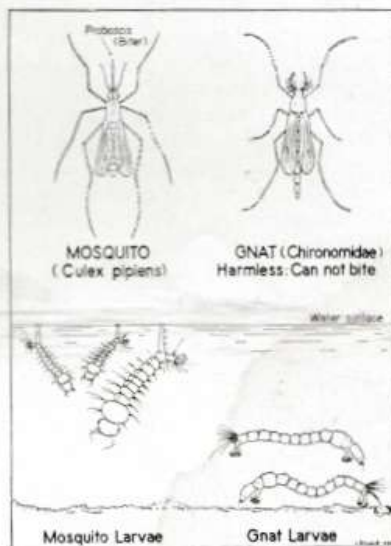
Shortly before hatching, the larvae turn into the more ball-like pupae, in which forms they are unable to leave

the surface except for a few seconds. They are equally as good fish food, but too dangerously near splitting at the back and becoming pesky mosquitoes. This is an astonishing process. In warm weather the cycle from egg to mosquito takes from 7 to 10 days.



Stages in the Development of a Mosquito
(enlarged about 4 diameters)

It is said that if the mosquito becomes wet in leaving its case, it cannot leave the water, and drowns. A film of oil on the water chokes the breathing tube of the larvae. This method, together with mosquito-eating fishes (and larvae-catching aquarists) constitute the principal methods of mosquito control.



Showing the Difference

between mosquitoes and gnats, and their larvae. At the lower right we have the bloodworm common in all still waters. It is an excellent fish food. (Worms enlarged about 3 diameters.)

Fins Grow to Meet Emergency

by R. S. COLLEY
Kent, Ohio

About a year ago I added to my collection a pair of *Molliensia sphenops*. The change to the new quarters was made as carefully as possible and the pair seemed to be enjoying their new home. However, a week or so later I noticed that the male was rapidly becoming a victim of that malady that robs a fish of its swimming bladder or flotation compartment. I felt sorry for the little fellow as I saw his frantic efforts to keep afloat, for in a very short time his gravity became so great that only by a very rapid movement of the pectoral fins could he get around and get food. As soon as he ceased to swim he sank to the bottom, where he would land with a bounce much the same as a plane making a poor landing.

I tried adding salt to the water, thinking that the change in gravity might help him, but nothing short of a brine would have floated him. I even thought of borrowing a hypodermic needle and trying to inflate him, but the danger that I might overdo the thing and have him floating on the surface of the water kept me from trying that stunt.

His frantic struggle for existence distressed my wife so much that she asked that I get rid of him. This I did by putting him in my outdoor pool, this being the first of May, fully a month before I would think of putting the remainder of my fish outside. This was the last I saw of him until Labor Day, when the pool was drained and the fish returned to indoor tanks. My *Molliensia sphenops* was among those who answered the roll call, but some very noticeable and interesting changes had taken place in him. Mother Nature had been kind to him, for the area of his pectoral fins had increased about four times the original area, giving him a

sort of butterfly fish appearance and his method of navigation had now become a leisurely dog paddle movement that seems to get him where he wants to go, equally as well as did the frantic swimming he used to do. His tail also underwent a change. Instead of being equally disposed above and below the body, as in a normal fish, it turned up at an angle, making it look like the tail fin of a seaplane, the only reason I can see for this being the position in which he rested at night, the tail being held up off the sand until it took a permanent set. He has lived over a year in this condition. Aside from these odd changes and a slightly pinched look in the region where his air bladder used to be, he gets around, eats well, and seems to enjoy life, and proves the saying that "The Lord fits the back to suit the burden." Others say, "When the Lord closes a door he opens a window."

Tree Frogs Eat Fish

By O. C. BELDT

Recently a tree frog of the small native variety hopped into one of our fish houses. One of the boys happened along, caught it, and thought that our fishes might enjoy a meal of frog legs. If they are good for man, why not for fish? In dissecting the frog, he was astonished to find that it contained a Gold Moon fish almost as large as the frog. If some of those who will not believe that frogs eat fishes would catch some of them around their pools, they would soon be convinced when they cut them open.

Tree frogs are favorite little pets of mine, because they are so cute and tame, and it is always fascinating to see how they can grab insects, but at the same time I have to admit that they are not good to have around aquarium fishes small enough to be swallowed.

AN EXPORTER TELLS HIS TROUBLES

BY *Alexandre Steinhöfer*

Ismailia, Egypt

THIS is an answer to the letter of Major Henry J. Rice, published in THE AQUARIUM of April, 1939.

In this letter, Major Rice, speaking about *Panchax lineatus*, says, "Heaven only knows how he reached America alive!"

Major Rice is right, but I should like the readers of this magazine to know that there are a few earthbound folk that share Heaven's knowledge. I am one of these fortunate few, who really know how some fishes reach the aquarist in America alive. It is not a very easy job. I am most familiar with the tribulations of a German ship which passes through the Suez Canal regularly and does some of this difficult work. They have on board ship about 200 to 300 aquaria of all sizes, with two hard workers to look after them every minute of the day and night. Any fish showing the slightest signs of sickness or even uneasiness is at once removed from the rest of the fishes and placed in a hospital aquarium. On this ship you can see marine and freshwater fishes in quantities impossible to count, and yet, with all the fine care, live food, etc., given to these fishes, only about one-half of the original shipment reaches the importer, and when the aquarist gets them, they have again been halved, so that only one-quarter actually reaches the aquaria of the United States. Let this be told to those who are inclined to argue about high prices.

Occasionally there is a complete loss by the exporter; this once happened to me. I supplied this ship with some fishes on an exchange basis, and it so happened that I had already received my fishes, etc., so they asked me to supply a large lot of Sea Horses. These creatures, as few people know, must be kept in a container especially made for the purpose, floating and anchored somewhere handy in the port, to be taken aboard ship (in another container previously handed aboard the ship) just before sailing, and transferred again to another container for the journey. Well, my ship arrived, and I lifted the original container only to discover that the bottom had dropped away, and all the 2,000* Sea Horses were free again! I could save only about 35, as it was night, and I had to work with a flashlight. So there I was; I had lost two weeks' work to get together all those Sea Horses, and at the last moment I saw them go free again. I am sure the Sea Horses were very glad, could they have known that prison awaited them, but nevertheless I was very grieved at the loss, and so were my friends, as I do this work only on a friendly basis, and for a pastime. I am, you know, also in a country where, as Major Rice says, there is great difficulty in buying proper aquarium equipment. In fact, there are no aquaria or equipment to be had, and if he envies you Americans your facilities for splendid aquarium keeping, well—I cannot say less than that for myself!

IN PRAISE OF ARGYROL

• A letter from a correspondent

Dear Mr. Editor:

This is a letter of gratitude for the article, "Good for Sore Eyes," published in the April, 1939, issue of THE AQUARIUM.

You may recall that I wrote asking your advice about netting my large pair of Scalares from the 10-gallon tank. Thanks to your backbone stiffening letter I had no trouble catching them.

The new tank specially built by the Metal Frame Aquarium Company, Caldwell, New Jersey is 24" long, 12" wide and 18" deep, equipped with a reflector, aerator, Marco heater and thermostat. It was expensive, but I never fully appreciated my fish until they were placed in that tank.

They spread their fins to the fullest extent, dipped and circled and generally disported like youngsters just out of school. It seemed that they grew larger almost overnight. Probably they never had space to fully spread their fins before. It was amusing to see them swim as far as they had been able to in the old tank, then stop, seemingly surprised that there was no barrier. After cautiously nosing the rest of the length of the new tank, until they had the complete lay-out, they began swimming at full speed, stopping just short of bumping the glass.

The following day they began spawning operations, and I was elated, but alas, for the "plans of mice and men"—and fish! The male began to show a white film of fungus, just on one eye, and then on the other, until he was totally blind. It seemed like a white skin that rapidly covered the entire eye, like a cataract. Then one eye began to bulge out like a prize-fighter's that had made connections with a mean fist-glove. My first thought was of the

dreadful "pop-eye." I began searching through my AQUARIUMS for help, and you came through.

I had a 10% solution of Argyrol put up by the druggist, who was much amused by the idea of the treatment.

Mr. Scalare did not try to evade the net—he couldn't see it. I used the Argyrol, generously, on a swab every three hours for two entire weeks, and siphoned about twenty quarts of water daily to prevent a concentration of the medication that washed off the eyes.

In the meantime, the female deposited her eggs, infertile, because she seemed to sense that her mate was infected and refused to let him near the spawn. She was really mean, biting at the sore eyes continuously and chasing the poor fellow into a corner. After two weeks of swabbing the bulge disappeared and the cornea began to show, so I reduced the treatments gradually.

Having been netted so many times and feeling much better with the partial return of his sight, Mr. Scalare began to make a game of being caught. When I put the net into the tank, he swam around it, then ducked into the tallest plants, but finally swam right into the net, seeming to say, "Well, O. K. Let's get the darned business over with." This maneuver he went through repeatedly, much to my amusement.

With the complete return of her mate's sight, Madam Scalare met her Waterloo, for he took stern reprisal for the mistreatment she had given him. For nearly three weeks he kept her in a corner of the tank and if she but flicked a fin he administered a sound fish spanking. They are now reconciled.

Sincerely yours,

(MRS.) MARION LEWKE,

Buffalo, N. Y.

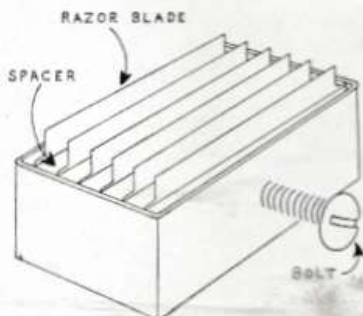
Chopper Simplifies Task of Mincing Worms for Fish Food

By FRANKLIN E. HEINE
Milwaukee, Wis.

That vexing problem of what to do with old razor blades is a great mystery, but to the fish fancier there is no catch in its solution.

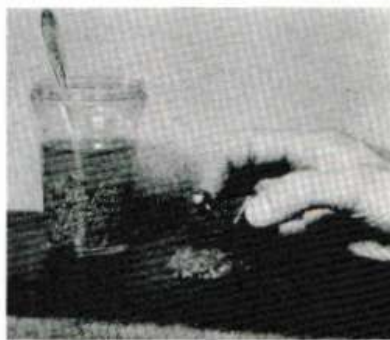
A device for chopping worms into extremely fine particles for fish food solves the problem. At the same time the hobbyist is relieved from the tedious job of mincing night crawlers into bits with a single bladed knife.

A piece of 1/16 in. brass, 6 in. long and 3/4 in. wide is bent to form a rectangle having an inside measurement of 1 3/4 in. by 1 in. The ends should meet perfectly to form a corner which is soldered and smoothed with a file. Another piece of brass is then soldered over one of the open ends.



In the center of one of the long sides a hole should be drilled and threaded to accommodate a 1/4 in. stove bolt. The box is then ready to receive the razor blades.

A piece of rainbow packing should first be fitted firmly into the bottom of the box to provide a shock absorbing cushion. This packing may be purchased in various thicknesses from plumbing supply stores. One eighth inch material



Worm Chopper in Use

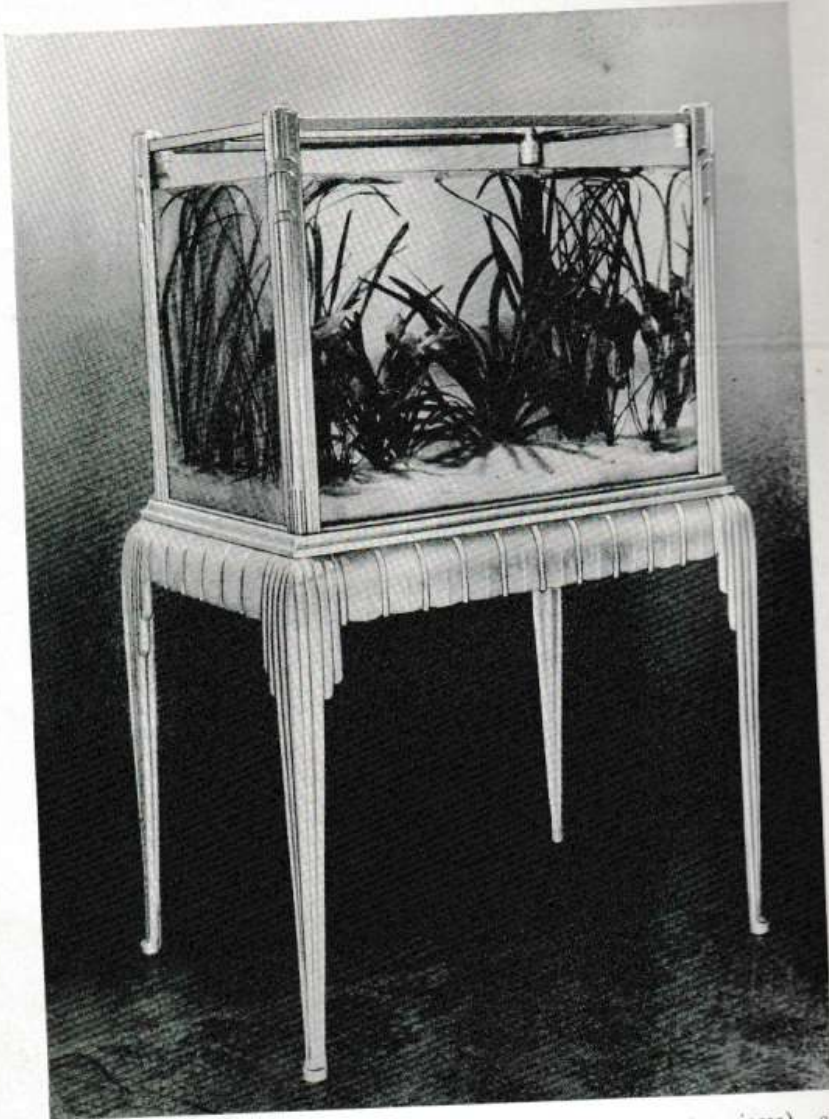
is most suitable, although layers of inner tubing may be substituted.

Each blade is interspaced with packing cut to size so that it does not extend beyond the upper edge of the box.

A strip of metal about 1 1/2 in. by 1/2 in. should be inserted after the last blade so that when the bolt is tightened it will exert an even pressure. The completed chopper will hold about six blades.

Another method of mincing worms is by running them through a small meat-grinder, called a "masticator." It is especially made for raw-vegetable faddists, and for folks with weak teeth.

When an established aquarium is allowed to dry there is a hard film on the inside, almost so firm that it seems baked on. In fact, any established aquarium, even when just emptied, has a deposit on the glass which the snails could not quite clear. When there are no snails, the glass is heavier with algae. In any of these cases if a tank is emptied and one desires to clean it well, the glass can be cleared perfectly by rubbing it with salt, applied with a damp cloth. Whiting may be used instead of salt. Care should be used not to scratch the glass by getting any sand on the cloth.



The Aquarium Beautiful . . . Keeping pace with modern trends in design, interest in artistic aquaria is very keen. The accompanying illustration shows the brilliant work of one of our most talented enthusiasts. The stand and

aquarium (in separate pieces) are made of cast and polished aluminum. Concealed connections furnish electric power for aeration, filtration, heat and underwater or overhead light. Capacity, 50 gallons.

~ The EDITOR'S LETTER ~

Dear Readers:

WE have a 6-foot square concrete pool in our yard. My dear father and I built it way back in 1912. If it were made today we would have gotten the form arranged and then ordered a load of freshly machine-mixed concrete. The job would have been poured in ten minutes, but we did it the hard way, yes, the *tough* way, for I know of no work quite so back-breaking as mixing concrete and carrying it in buckets. But it was a rich investment. No other single thing has given me so much satisfaction. Interest in it never wanes. My plan has always been to have one tropical waterlily and one pair of rare exotic fish in it each summer. With more live food present than the fish can eat, breeding takes care of itself.

While fondly eyeing the old pool the other day I noticed something that is really the theme of this letter. It was a Water Strider, one of those long-legged insects often seen darting lightly over the surface of small streams, in search of insect victims that have fallen on the water. These Striders at times can fly short distances. There is no stream within several miles of my home, yet most years I find one or two of them in the lily pool. How they find my little spot is a mystery. My theme is the importance to the aquarist, for good or ill, of air-borne visitors. To begin with, while the Water Strider is not common in fish tanks, it is an enemy of small fishes. So is the dark, sweet-smelling Whirligig, or Coffee Bug. The giant Electric Light Bug flies by night and stalks its prey in water by day. Beautiful Dragon Flies deposit eggs in water that become strong, predaceous larvae, arch enemies of fishes. Eggs of the deadly Water Tiger are laid by the Diving Beetle, a night flier and itself a powerful enemy of small and large fishes. Small beetles are sometimes brought in with Daphnia. All but a few are dangerous and should be destroyed on sight.

On the other hand we have blessings from the heavens. Most important to the breeder of fishes are the spores of "Infusoria." They are blown by every breeze and fall into exposed water anywhere, needing only the slightest encouragement to develop into the first living food for baby fishes. Algae come by the same route.

Those pestiferous mosquitoes are visitors from the air having much merit, for their floating eggs turn into wriggling larvae that are among the best of fish foods. Much the same can be said of midges, except that their larvae are nutritious Bloodworms. Glassworms are the larvae of another fly.

Air seems so light and impalpable that we do not expect much to come from it, but ask the Chinese or the Spanish of today, or London of the next war!

Sincerely yours,

Wm. T. Innes

Gleanings

from the reports of the German Aquarium Societies in German magazines, with comments by the translator.

F. H. STOYE

Berlin — "Nymphaea alba" — Wochenschrift.

A member had Hydra in his 100-gallon tank. He siphoned off half the water and added nitrate of ammonia to the half remaining in the aquarium. When one adds 2 grams to every 10 liters of water, the fishes can remain in the tank. With this dosage it takes four days or even longer to kill all the hydra. The member in question used a double dose of nitrate of ammonia, with the result that all hydra were dissolved within two days. Using this double dose he had to remove all fishes beforehand. The plants—Myriophyllum, Ludwigia, Sagittaria, were not injured. With Cryptocoryne one has to be more careful.

Comment—A remedy for Hydra that seems to be harmless, effective and therefore well worth a trial. One liter equals one-and-one-tenth quart, one gram equals one quarter dram. Consult your pharmacist before using and mention the German term "Ammoniumnitrate."

* * *

Braunschweig — "Riccia" — Wochenschrift.

Some of our members reported that fishes grow much better in planted tanks than in unplanted ones. As the tanks were aerated and the fishes received exactly the same food, the solution seems to lie in the fact that in the unplanted tanks the waste products of the fishes were not absorbed. Biological balance requires plants not only for exchange of gases, but also for the utilization of waste products, injurious to fish. Only filtration through activated carbon may have the same effect (as

plants). In the latter case fish food may also be removed.

Comment—There can be little question that only a balanced aquarium provides the best conditions for the growth and maintenance of fishes, and a balanced aquarium means one that contains a sufficient number of growing plants for the exchange of gases and the absorption of waste products of the fishes. Although an aquarium was originally "unplanted," it does not stay free of plants very long. Unless such a tank is disturbed quite frequently and scrubbed clean at regular intervals, algae become established in it. Under good lighting conditions they grow luxuriantly and perform the functions of the higher "planted" aquatic plants. Algae are excellent oxygenators and aid materially in making an aquarium "balanced."

Activated carbon filters, when properly used, are able to take the place of plants to a large extent, for they circulate the water and, by constantly changing the surface, allow it to absorb oxygen and release gases. During the filter action the pre-filtering material (which has to be changed quite frequently) removes the visible impurities from the water before it flows over the activated carbon. The latter removes the invisible impurities (dissolved substances and gases) by adsorption. As far as the removal of food by filters is concerned (and we assume that by "food" live food is meant) our extensive experience with filters has shown that no appreciable number of crustaceans (Daphnia, Cyclops, Bosminae, Etc.) will be removed unless the intake tube of the filter terminates in that

rather well-lighted portion of the aquarium where these food animals are apt to congregate. And, contrary to expectations, the population of microscopic live food or protozoans will increase when the water of an aquarium is filtered over activated carbon. The moderate use of such a filter materially enriches the oxygen content of the water and provides better general conditions both for fishes and animalcules. The crystal-clear water of a filtered aquarium must be seen to be appreciated.

* * *

Chebnitz—"Nixe"—Wochenschrift.

Friend Buchheim related his breeding experiences with *Tanichthys albonubes* as follows: After the pairs had been selected from the fishes bought at several stores they were placed in breeding tanks. The pairs invariably spawned in plant thickets and it was extremely difficult to discern the eggs. Only a well-trained eye was able to see them. A promiscuous dispersal of the eggs, as practised by other free-spawners, could not be observed. Neither could we see that the parents ate their caviar. The young emerge in about 40 hours and are very small. Success depends largely upon the presence of proper live food; it reminds one of *Ambassis lala* in this respect. Large broods cannot be expected and a comparison with *Danio* species is erroneous. Mr. Buchheim counted 161 young from three broods, of which a portion was lost, due to lack of proper food. It is recommended to use various infusoria as the first food and to add fresh tempered water at regular intervals. Infusoria develop better in fresh water and the young fishes grow better. These fishes are willing spawners. Pairs which were placed together in the evening invariably spawned the following morning.

Comment—A concise, but complete report on the breeding of this beautiful fish, which requires no comment.

* * *

Berlin—"Nymphae alba"—Wochenschrift.

The following case proves the unusual hardiness of *Elassoma evergladei*, the water temperature, which had been at 75°, dropped to 48° within a few days (without harming the fishes). The most remarkable part is that the eggs hatched at 48°.

Comment—European aquarists generally, and those in other countries, even our own, who are not familiar with the climatic conditions of Florida, seldom realize that during the latter half of November, December, and the first part of January the nights are apt to get quite cool in all but the southernmost portions of this only tropical section of our country. Minimums of 40° or less are not unusual during the several cold spells occurring within this six-to-eight week period. Consequently the water in the shallow pools and ditches inhabited by Pigmy Sunfishes drops to 50° or less at night and the surface strata are warmed again to 75° or more during the daytime by the hot sun. This explains the hardiness of *Elassoma evergladei* and its ability to withstand quite severe temperature changes.

* * *

Leipzig—"Azolla"—Wochenschrift.

To be successful with *Ambassis lala* one should not use too small breeding tanks. The larger the aquarium, the easier it is to rear the young.

Comment—This is not only true of the Glass Perch, but of all fishes, particularly of the spawning fishes in which there is a comparatively large number of tiny young requiring microscopic live food.

CORRESPONDENCE

LETTERS appearing here have already been answered personally. The ones selected for publication are those containing points of interest to readers. We answer all letters on day of receipt, provided a stamped, self-addressed envelope is furnished.

From John Fratzer, Coraopolis, Pa.

When bubble-nest builders have placed eggs in the nest, is there any danger of snails eating the eggs? (2) Would you think it a good idea to prepare a fish food from chopping pieces of minnow, and also fresh water crayfish?

Ans.: This is a question that must be answered with certain qualifications. If snails were allowed to roam at will through the aquarium, especially any large number of the small pond snails, the probabilities are that they would eat the lower layer of eggs. As a matter of fact, Bettas and most of the other bubble-nest builders are snail-killers, and whatever snails may be present are apt to be feeling rather blue and discouraged, because in most instances their horns have been nipped off, if they have not been actually pulled out of the shells and killed. Even though the fish allowed snails to creep freely along the underside of the nest, many of the eggs are raised above the surface, and embedded in the foam of the nest, where any snails, even small ones, have a difficult time in reaching them. Theoretically the snails will eat the eggs, but practically it does not seem to work out that way. (2) Any fresh food of the general character suggested by you would make excellent fish food, either freshly chopped or dried and ground. Of course it would be necessary to remove the shell of the crayfish.

* * *

From Elliott R. Starks, Madison, Wisc.

I have a "happy family" aquarium which has really been a happy family until recently. One of my favorite Black Platies seems to have gone on the rampage, and decided that he is the

dictator and policeman for the whole aquarium. He chases the other fish until they take refuge, or they are so scared they are afraid to come out for their food. Is there anything that can be done to restore the former harmony of this group?

Ans.: It is very rarely that these little bullies become subdued again, except by placing them in an aquarium of fishes that are larger or more aggressive than themselves. We have had correspondents tell us that by placing one of these annoying fishes in back of a glass partition in the aquarium, he presently became discouraged by batting his head against the glass, and left the other fishes alone even after the glass is removed. We have considerable doubt as to whether this works. We think you had better place the fish in another tank or get rid of it altogether.

* * *

From Norman Boudier, Jr., Baltimore, Md.

For several months I have been troubled with green water in my 10-gallon tank, and I have not been able to get rid of it by interposing sheets of tissue paper between the aquarium and the source of light. I really was discouraged, when I put in several strong bunches of Anacharis. I had no idea that this would clear the water, but it seems to have had that effect, and since they are in the aquarium, I have been delighted with the crystal-clear quality of the water. Perhaps many of your other readers would be glad to know about this.

Ans.: We would hesitate to believe that the Anacharis was entirely responsible for the change in condition, although it may have had some effect.

Plants battle with each other for the sustenance in the water, and it may be that the Anacharis starved out the algae. We would have to see this demonstrated a number of times before drawing any conclusions. Our own suspicion is that the water was about ready to clear itself up anyhow, and it may have been helped slightly by the presence of the Anacharis.

* * *

From J. F. Stakel, Edgewood, Penna.

I have just taken up the raising of Bettas. My pair are of very good stock and have had a batch of eggs. The eggs all hatched and in about a week the one-gallon tank was full of young. They then began to die off, and I would like you to tell me why. Temperature in the tank was between 80 and 95°, and it was glassed over. Moderate rations of infusoria were fed, little light reached the aquarium, and the male was removed when the young could manage themselves. I have a 5-gallon tank, 8 inches deep. Would this be better for the Bettas than the 1-gallon, 4-inch tank? The tank was half full of snail-free plants. What is the matter?

Ans.: As soon as we read the first paragraph of your letter and found a big lot of young Bettas were in a 1-gallon aquarium, we knew what the rest of the letter contained. You were going to say that the babies started dying off. This is always the case unless you have a large, well-established aquarium. Depth is not very important, and if you want to, you can have your 5-gallon tank only half filled. As a matter of fact, if you expect to raise the majority of the spawning, you ought to have an old 20-gallon aquarium (or larger) well established, and you must feed the young with plenty of Infusoria. Your letter states that you had been feeding them moderately. Remember that most young of the nest-building

fishes die of starvation. Also, your temperature is unnecessarily high. 80° would be plenty.

* * *

From Christian H. Brunner, Pleasantville, N. Y.

I am very much interested in rearing live-bearers, but am uncertain as to how you can tell when to put the expectant mother in a separate place. Can you give me any hint as to this? Also, how frequently will they have more batches of young? Is it necessary to put the male with the female when I put her in a separate place? How long does it take for them to deliver a brood of young after they start?

Ans.: Most live-bearing fishes have a tendency to eat their young, and you will have to do something about this if you wish to save the babies. It is impossible for anyone to tell the exact time when a new litter of young is going to be born. It depends upon the temperature, food, and the general health of the fish. If you have a good pair of eyes in your head, you can certainly notice when a female is getting corpulent, and when you see this, it is a good idea to place her by herself in the aquarium which is well planted with enough foliage so that the young can hide from her. The planting should be done on the light side of the aquarium, as the babies seek that side. A lot of floating plants, such as Riccia, is also a help, as the babies seem to like to swim amongst this. The presence of the male is entirely unnecessary when the female is going to have her young. She is fertilized for at least four broods, and does not need to be refertilized until that many lots are born. When the female starts to drop her young, it usually takes from an hour to two hours, or perhaps a little longer to finish. If the female has as many as 120 young, it may take half a day.

Is the Liberty Molly Guilty?

Mr. E. H. Schaub, of New York City, writes us the following comment:

"According to my experience the Liberty Molly is the most vicious fish that can be placed in a community tank. Nowhere, including THE AQUARIUM, do I read about the bad trait of this fish. Dealers everywhere are selling them as community fishes. I think somebody should warn the buying public. They have killed in my tanks Black Tetras and Rasboras, and have chewed the tails of Hatchet Fishes. Even the long fins of my adult male Betta have been shredded by this pest. This is not limited to a single fish in one tank. It happens wherever I have Liberty Mollies. Too bad, for they are beautiful."

The Liberty Molly is a color strain of *Mollienisia sphenops*. As has been widely observed, *M. sphenops* is a variable species, both as to color, fin development, size and temperament. All of them are lively, and probably the most hardy of the Mollienisias.

It is quite true that individuals among them are extremely aggressive. They seem to be bubbling over with energy and have to find an outlet for it. This sometimes takes the form of chasing other fishes to death. A year ago the editor had an exceptionally beautiful Orange-tail Molly which he gave to a friend. He had kept it among larger fishes, where it acted quite decently. In its new home among fishes of its own size, its chasings became intolerable, and it had to be banished.

Other essentially peaceful species besides Mollienisias develop highly-strung, over-active individuals. Call it play or meanness, as you will, the result is the same. A change to an aquarium of larger fishes seems to be the only cure, unless one admires the fish sufficiently to take the trouble to partition it off from the others.

Mr. Schaub's experience in finding all Liberty Mollies to be "bad actors" is unusual, but his observation is worth bearing in mind. Other aquarists have reported them to be nervous fishes. It is well to remember that all kinds of

Mollienisias should have a scalded leaf of spinach to pick at, much the same as a canary has a cuttlebone.

About Blindness in Turtles

by O. C. BELDT

I read with interest the article by Mr. C. W. Coates in the March issue of THE AQUARIUM, and while I think his points are well taken as to feeding, I can not agree as to the food being the principal cause of blindness.

We receive quite a number of inquiries, mainly in the spring of the year, from people whose turtles have gone blind. My own investigation leads me to the conclusion that this is due to a fungus infection, which has become worse through lack of treatment. I found that a quick cure is to remove the turtle from the water and keep it dry for several days, which it stands very well. While still dry, a single drop of 2% Mercurochrome would be placed on each eye.

Blindness results mostly from turtles being kept in small pools, where the water soon fouls. Fishes so kept would become fungused even sooner.

It seems that the eye is the only delicate part of a turtle, as the skin is tough and thick. We have a law here in St. Louis which prohibits the sale of baby chicks to children at Eastertime, but if the authorities only knew it, the sale of small turtles is even more inhumane, when they are to be kept in dirty water. The purchasers should receive a little pamphlet explaining how to take care of them. If their water is changed frequently, there will be very little trouble, especially where the water has been treated with chlorine, which is the case in most large cities.

It is also desirable, as Mr. Coates says, to give turtles plenty of sunlight.